



INTERTEK MOODY MARINE LTD

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MSC Assessment Report for

New Zealand Southern Blue Whiting Trawl Fisheries

Client: Deepwater Group Ltd

Version 5: Public Certification Report

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1. SUMMARY

This report contains the assessment of three trawl fisheries for southern blue whiting within New Zealand's Exclusive Economic Zone (EEZ), against the Marine Stewardship Council's (MSC) Principles and Criteria for Sustainable Fishing.

The assessment was carried out by an Intertek Moody marine (IMM) team of three assessors: Dr. Paul Medley, Dr. Graham Pilling and Jo Akroyd with Andrew Hough as the Lead Assessor and Seran Davies as the Project coordinator. Peer Review was undertaken by Dr. Mike Pawson and Dr. Johanna Pierre. Their reports and IMM's responses are appended to this report.

The evaluation of the fishery against the MSC Principles and Criteria was undertaken following a site visit in July 2009 to the fishery in Nelson and relevant stakeholders in Nelson and Wellington, New Zealand. Information gathered during this site visit was then used in conjunction with other available literature to produce a draft report and score the fishery against the MSC Performance Indicators. The MSC Certification Requirements (v 1.2, January 2012) are now operational. However Certifying Bodies were given the opportunity for fisheries that were being assessed using the FAM V1 to continue to be assessed against FAM (V1) requirements. In order to do this, IMM applied to the MSC for a variation for Southern blue whiting. This was done and accepted. Therefore Southern blue whiting can still use FAM V1 until it reaches the point of re-certification.

The draft report and scores of the fishery were supplied to the client for review. Deepwater Group Ltd (DWG) completed a response to Intertek Moody Marine on their Draft Client Report on their assessment of New Zealand's southern blue whiting fisheries against the MSC standards.

Given the time that had elapsed since the site visit in July 2009, and the considerable amount of new information that had become available, DWG (with assistance from the Ministry of Fisheries) provided a number of additional documents that were considered to be pertinent to Moody's assessment. The assessment team has considered these and taken this into account in the production of this report.

This list of these documents was also sent to stakeholders.

Following peer review Intertek Moody Marine updated the report with responses to peer review suggestions. This report was then made available on the MSC website for stakeholder comment for a period of 30 days.

MSC provided a review and report on compliance with the scheme requirements. Two major areas were identified concerning tracking and tracing. IMM agreed with these concerns and amended the report accordingly. The MSC report and IMM's response is appended to this report. This report is now being published as a final report on the MSC website.

Intertek Moody Marine has determined that these three fisheries should be certified in accordance to the MSC principles and criteria subject to one Condition.

No objections were lodged to this determination.

Condition 1. ETP Management Strategy

Based on the analytical information available, while operational strategies appear effective at reducing seabird, fur seal and coral interactions, they appear less effective for sea lions. While the fishery

impact appears highly unlikely to create unacceptable impacts on sea lion populations (2.2.1), there is no formal mitigation strategy to ensure this remains so, and analytical evidence to provide an objective basis for confidence that the operational strategies in place will work.

Action required: i) Identify the level of ETP species interactions that would lead to adverse effects on population levels for sea lions, and ii) where a problem is identified, develop and implement appropriate management approaches to achieve those national requirements and objectives. Provide evidence that the strategy is being implemented successfully.

Timescale: Within three years of certification.

Milestone 1: By the first annual surveillance, identify the level of ETP species interactions that would lead to adverse effects on population levels for sea lions,

Milestone 2: By the second annual surveillance, where a problem is identified, develop and implement appropriate management approaches to achieve those national requirements and objectives.

Within three years of certification

Milestone 3: provide evidence that the strategy is being implemented successfully.

Relevant Scoring Indicators: 2.3.2 (SBW 6I only)

2. INTRODUCTION

This report sets out the results of the assessment of three trawl fisheries for southern blue whiting within the New Zealand EEZ against the Marine Stewardship Council (MSC) Principles and Criteria for Sustainable Fishing.

2.1 The fisheries proposed for certification

The MSC Guidelines to Certifiers specify that the unit of certification is "The fishery or fish stock (=biologically distinct unit) combined with the fishing method/gear and practice (=vessel(s) pursuing the fish of that stock)." The fisheries proposed for certification are defined as:

Species:	Southern Blue Whiting, <i>Micromesistius australis</i>
Geographical Area:	NZ EEZ
Unit of Certification 1:	Bounty Platform, (SBW 6B)
Unit of Certification 2:	Campbell Island Rise (SBW 6I)
Unit of Certification 3:	Pukaki Rise (SBW 6R)
Method of Capture:	Pelagic Trawl
Management System:	Ministry of Fisheries
Client Group:	Deepwater Group Ltd nominated vessels/companies

In the course of the certification it is possible that further companies/vessels may join the client group. This would be in accordance with the MSC's stated desire to allow fair and equitable access to the certification.

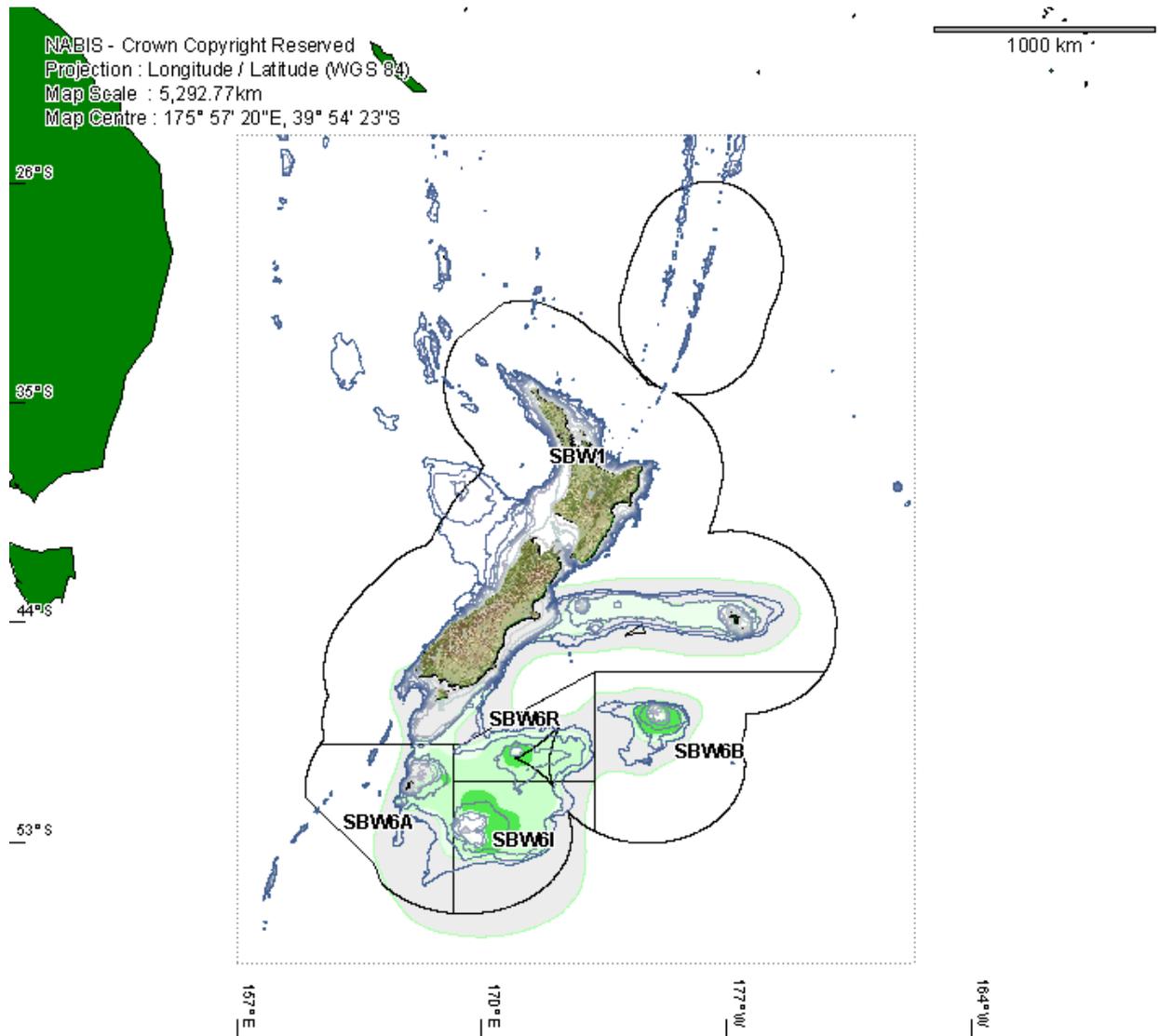


Figure 1: Location of the southern blue whiting management areas within the New Zealand EEZ Source: NABIS

2.2 Report Structure and Assessment Process

The aims of the assessments are to determine the degree of compliance of the fishery with the MSC Principles and Criteria for Sustainable Fishing, as set out in Section 9.

This report sets out:

- The background to the fisheries under assessment and the context within which these operate in relation to the other areas where southern blue whiting are fished
- The qualifications and experience of the team undertaking the assessment
- The standard used (MSC Principles and Criteria)
- Stakeholder consultation carried out. Stakeholders include all those parties with an interest in the management of the fishery and include fishers, management bodies, scientists and environmental Non-Governmental Organisations (ENGO's)
- The methodology used to assess ('score') the fisheries against the MSC Standard
- A scoring table with the Scoring Indicators adopted by the assessment team and Scoring Guidelines which aid the assessment team in allocating scores to the fishery. The commentary in this table then sets out the position of the fisheries in relation to these Scoring Indicators.

The intention of the earlier sections of the report is to provide the reader with background information to interpret the scoring commentary in context.

Finally, as a result of the scoring, the Certification Recommendation of the assessment team is presented, together with any conditions attached to certification.

In draft form, this report is subject to critical review by appropriate, independent, scientists ('peer review'). The comments of these scientists are appended to this report. Responses are given in the peer review texts and, where amendments are made to the report on the basis of peer review comments; these are also noted in the peer review text. Following peer review, the report was then released for public scrutiny on the MSC website.

The report, containing the recommendation of the assessment team, any further stakeholder comments and the peer review comments was then considered by the Intertek Moody Marine Governing Board (a body independent of the assessment team). The Governing Board then make the final certification determination on behalf of Intertek Moody Marine Ltd.

Finally, the complete report, containing the Intertek Moody Marine Ltd Determination and all amendments, was released for further stakeholder scrutiny.

No objections to the determination that this fishery be certified were lodged.

2.3 Stakeholder meetings attended

Information used in the main assessment has been obtained from interviews and correspondence with stakeholders in the fishery, notably (Please see section 10.3 for a complete list of personnel):

- I1. Deepwater Group Limited
- I2. Ministry of Fisheries
- I3. Department of Conservation
- I4. National Institute of Water & Atmospheric Research Limited (NIWA)
- I5. Dragonfly Limited
- I6. NZ Seafood Industry Council Limited
- I7. Royal Forest and Bird Protection Society
- I8. ECO

- I9. Greenpeace
- I10. WWF – New Zealand

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3 GLOSSARY OF ACRONYMS AND ABBREVIATIONS USED IN THE REPORT

ACE	Annual Catch Entitlement
BPA	Benthic Protection Area
B0	Virgin Biomass
CAY	Current Annual Yield
CITES	Convention on International Trade in Endangered Species
CPUE	Catch per Unit Effort from commercial vessels statutory records
DOC	Department of Conservation
DWG	Deepwater Group Limited
EEZ	Exclusive Economic Zone (i.e. the maritime area from 12 to 200 nautical miles offshore)
ETP	Endangered, Threatened, Protected Species
F	Fishing Mortality
FAO	Food and Agriculture Organisation of the United Nations
FCV	Foreign Charter Vessel
FL	Fork length
INMARC	Interim Nearshore Marine Classification
ITQ	Individual Transferable Quota
IUU	Illegal, Unregulated and Unreported Fishing
LFR	Licensed Fish Receiver
M	Natural Mortality
MARPOL	International Convention for the Prevention of Pollution from Ships
MAY	Maximum Average Yield
MCMC	Markov Chain Monte Carlo
MCS	Monitoring, Control and Surveillance
MCY	Maximum Constant Yield
MEC	Marine Environmental Classification
MFish	New Zealand Ministry of Fisheries
MHR	Monthly Harvest Return
MPA	Marine Protected Area
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NABIS	National Aquatic Biodiversity Information System
NIWA	National Institute of Water and Atmospheric Research Limited
NZ	New Zealand
NZFSA	New Zealand food Safety Authority
PSA	Productivity-Sensitivity Analysis
QMS	Quota Management System
RFMO	Regional Fisheries Management Organisation
SBW	Southern Blue Whiting
SLED	Sea Lion Exclusion Device
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
TCEPR	Trawl Catch, Effort and Processing Return
U_{max}	Maximum Exploitation Rate
UNCLOS	United Nations Convention on the Law of the Sea
VME	Vulnerable Marine Ecosystem
VMP	Vessel Management Plan
VMS	Vessel Monitoring System
WG	Working Group
WWF	World Wildlife Fund

Y	Yield
YCS	Year Class Strengths
ENGO	Environmental Non-Governmental Organisation

4 BACKGROUND TO THE FISHERIES

4.1 Introduction

The Deepwater Group Ltd was formed in September 2005, to represent the owners of quota within the New Zealand EEZ. Fisheries managed by Deepwater Group Ltd are those targeted commercially and usually fished at depths between 200 and 1200 metres. These include orange roughy, oreo dory, hoki, hake, ling, squid and jack mackerel.

It is a non-profit Organisation, and works closely with government and other interest groups to ensure that New Zealand gains the maximum economic yield from New Zealand's deepwater fisheries resources managed within a long-term, sustainable framework.

The following section discusses the New Zealand southern blue whiting and the development and status of the fisheries, which target this species within the New Zealand EEZ.

4.2 Biology of the Target Species

Southern blue whiting is a schooling species that is predominantly found in sub-Antarctic waters. Early growth has been well documented with fish reaching a length of about 20 cm FL after one year and 30 cm FL after two years. Growth slows down after five years and virtually ceases after ten years. Ages have been validated up to at least 15 years by following strong year classes, but ring counts from otoliths suggest individual fish may reach 25 years.

The ages and lengths at maturity, and at recruitment into the fishery, vary between areas and between years. In some years a small proportion of males mature at age 2, but the majority do not mature until age 3 or 4, usually at lengths of 33–40 cm FL. The majority of females also mature at age 3 or 4 usually at lengths of 35–42 cm FL. Ageing studies and biomass surveys have shown that this species has very high recruitment variability.

Southern blue whiting are highly synchronised batch spawners. Four spawning areas have been identified on Bounty Platform, Pukaki Rise, Auckland Islands Shelf, and Campbell Island Rise. The Campbell Island Rise has two separate spawning grounds, in the north and the south respectively. Fish appear to aggregate to spawn first to the southern ground but thereafter spawn also on the northern ground. Spawning on Bounty Platform begins in mid August and finishes by mid September. Spawning begins 3–4 weeks later in the other areas, finishing in late September/early October. Spawning appears to occur at night, in mid-water, over depths of 400–500 m on Campbell Island Rise but over shallower waters elsewhere. The four spawning areas are treated as separate stocks.

Natural mortality (M) was estimated using the equation $\log_e(100)/\text{maximum age}$, where maximum age is the age to which 1% of the population survives in an unexploited stock. Using a maximum age of 22 years, M was estimated to equal 0.21. The value of 0.2 is assumed to reflect the imprecision of this value. Recent Campbell Island stock assessments have estimated M within the model, using an informed prior with a mean of 0.2 (see Table 1).

Table 1: Estimates of biological parameters for the Campbell Island Rise southern blue whiting stock. Source: Created from Hanchet 1991 and 1992**Estimate**1. Natural mortality (M)

Males	Females	
0.2	0.2	Source Hanchet (1992)

2. Weight = a (length)^b (Weight in g, length in cm fork length)

Males		Female		
A	b	a	b	
0.00515	3.092	0.00407	3.152	Source Hanchet (1991)

Note: Estimates of natural mortality and the length weight coefficients are assumed to be the same for the other stocks. Observed length at age data are used for all stocks.

4.3 History of the Fishery

Southern blue whiting are almost entirely restricted in distribution to sub-Antarctic waters. They are dispersed throughout the Campbell Plateau and Bounty Platform for much of the year, but during August and September they aggregate to spawn near the Campbell Islands, on Pukaki Rise on Bounty Platform, and near the Auckland Islands over depths of 250–600 m. During most years fish in the spawning fishery range between 35–50 cm fork length (FL), although occasionally smaller males (29–32 cm FL), may also be present.

Reported landings for the period 1971 to 1977 are shown in Table 2. Estimated landings by area from the trawl catch and effort logbooks and QMRs are given from 1978 to the present in Table 3. During the 1970s and early 1980s most of the catches were taken by the Soviet foreign licensed fleet, and the size of the fishery fluctuated considerably peaking at almost 50 000 t in 1973 and again at almost 30 000 t in 1979. Japanese surimi vessels first entered the fishery in 1986 and catches gradually increased to a peak of 76 000 t in 1991–92. A catch limit of 32 000 t, with area sub-limits, was first introduced for the 1992–93 fishing year (Table 3). The total catch limit increased to 58 000 t in 1996–97 for three years. Southern blue whiting were introduced to the Quota Management System on 1 Nov 1999, with the TACCs given in Table 3. The fishing year was also changed from 1 October – 30 September to 1 April - 31 March to better align with timing of the main fishing season. TACC changes since 2000–01 are shown in Table 3. A nominal TACC of 8 t (SBW 1) was set for the rest of the EEZ. Less than 20 t per year has been reported from SBW 1 since 2000–01.

Landings have averaged 26 928 t in the last five years, with the majority of the catch currently taken by a Japanese surimi vessel, Ukrainian and domestic vessels produce dressed product. On the Campbell Island Rise the TACC has been almost fully caught in each of the last 5 years. However, on the other grounds, the catch limits have generally been under-caught in most years since their introduction. This reflects the low economic value of southern blue whiting. On the Bounty Platform, the amount of fishing effort in any season depends largely on the timing of the west coast hoki fishery. If there is a delayed hoki season, then the vessels remain longer on the hoki grounds and consequently may miss the peak fishing season on the Bounty Platform. On the Pukaki Rise operators often find it difficult to justify expending time (e.g cost) to locate fishable aggregations, given the small catch allocation available in this area..

From 1 April 2003, the TACC for the Bounty Platform stock was reduced from 8 000 t to 3 500 t and from 1 April 2006, the TACC for the Campbell Island Rise stock was reduced from 25 000 t to 20 000 t. The TACC was exceeded by 5% on the Campbell Island Rise and by 10% on the Bounty Platform in 2007–08.

Table 2: Reported annual landings (tonnes) of southern blue whiting from 1971 to 1977. Source: Southern Blue Whiting (SBW) Plenary 2009 (SBW_FINAL_09)

Fishing year	Total
1971	10 400
1972	25 800
1973	48 500
1974	42 200
1975	2 378
1976	17 089
1977	26 435

Table 3: Estimated catches (tonnes) of southern blue whiting by area for the period 1978 to 2008-09 from vessel logbooks and QMRs. – no catch limit in place. *, before 1997–98 there was no separate catch limit for Auckland Is. Estimates for 2006–07 are preliminary. Source: Southern Blue Whiting (SBW) Plenary 2009 (SBW_FINAL_09)

Fishing year	Bounty Platform		Campbell Island Rise		Pukaki Rise	
	Catch	Limit	Catch	Limit	Catch	Limit
1978 ^f	0	–	6 403	–	79	–
1978–79+	1 211	–	25 305	–	601	–
1979–80+	16	–	12 828	–	5 602	–
1980–81+	8	–	5 989	–	2 380	–
1981–82+	8 325	–	7 915	–	1 250	–
1982–83+	3 864	–	12 803	–	7 388	–
1983–84+	348	–	10 777	–	2 150	–
1984–85+	0	–	7 490	–	1 724	–
1985–86+	0	–	15 252	–	552	–
1986–87+	0	–	12 804	–	845	–
1987–88+	18	–	17 422	–	157	–
1988–89+	8	–	26 611	–	1 219	–
1989–90+	4 430	–	16 542	–	1 393	–
1990–91+	10 897	–	21 314	–	4 652	–
1991–92+	58 928	–	14 208	–	3 046	–
1992–93+	11 908	15 000	9 316	11 000	5 341	6 000
1993–94+	3 877	15 000	11 668	11 000	2 306	6 000
1994–95+	6 386	15 000	9 492	11 000	1 158	6 000
1995–96+	6 508	8000	14 959	21 000	772	3 000
1996–97+	1 761	20 200	15 685	30 100	1 806	7 700
1997–98+	5 647	15 400	24 273	35 460	1 245	5 500
1998–00†	8 741	15 400	30 386	35 460	1 049	5 500
2000–01#	3 997	8000	18 049	20 000	2 864	5 500
2001–02#	2 261	8000	29 999	30 000	230	5 500
2002–03#	7 564	8000	33 433	30 000	508	5 500
2003–04#	3 812	3500	23 718	25 000	163	5 500

Table 3(Continued):

Fishing year	Bounty Platform		Campbell Island Rise		Pukaki Rise	
	Catch	Limit	Catch	Limit	Catch	Limit
2004–05#	1 477	3500	19 776	25 000	239	5 500
2005–06#	3 962	3500	26 190	25 000	58	5 500
2006–07#	4 395	3500	19 763	20 000	1 115	5 500
2007–08#	3 799	3500	20 996	20 000	513	5 500
2008–09#	9 863	9 800	20 483	20 000	1 377	5 500
2009–10#	15 467	15 000	19 040	20 000	4 808	5 500
2010–11#	13 912	14 700	20 870	23 000	4 523	5 500

f 1 April–30 September. + 1 October–30 September.

† 1 October 1998–31 March 2000 # 1 April –31 March.

‡ SBW 1 (all EEZ areas outside QMA6) had a TACC of 8 t, and reported catches of 9 t in 2000–01, 1 t in 2001–02, 16 t in 2002–03, 2.6 t in 2003–04, and 9 t in 2004–05, 2 t in 2005–06, 7 t in 2006–07 and 1 t in 2007–08.

Recreational fisheries

There is no recreational fishery for southern blue whiting.

Customary non-commercial fisheries

Quantitative estimates of the level of customary non-commercial take are not available but are thought to be low or nil.

Illegal catches

The level of illegal and unreported catch is thought to be low. However, the operators of one vessel were convicted for area misreporting; in 2002–03, the vessel caught about 204 t on the Campbell Island Rise (SBW 6I) that were reported against quota for the Pukaki Rise (SBW 6R), and another 480 t caught on the Campbell Island Rise were reported against quota for the Auckland Islands Shelf (SBW 6A). Table 3 shows corrected totals by area for 2002–03.

Other sources of mortality

Scientific observers (Helson, 2009) have reported discards of undersize fish and accidental loss from torn or burst codends. There is no quantitative estimate of this mortality and no estimates of discards have been considered in the stock assessments, but quantities are thought to be low.

4.4 Fleet and Gear Description

Catches of southern blue whiting are taken mostly by semi-pelagic trawls (Table 4). An unpublished report written by Baird, *et al.* (2002) on the spatial extent and nature of mobile bottom fishing methods within the New Zealand EEZ, 1989–90 to 1998–99 provides information on trawl gear types.

The trawl vessels deploy high aspect ratio multipurpose doors, which allow bottom or midwater operation. Vessels predominantly use Furuno CN22/24 electronic net-monitoring systems, which capture data on the headline height, the distance between the groundrope and the seabed, and water temperature, and transmit this data in real time through an acoustic link to the vessel's bridge to assist with the deployment in the water column. Some of the fleet use Scanmar or Simrad net monitoring equipment to measure door spread and catch sensors to assess codend "fullness", but none use trawl sonar as cabled systems are illegal in New Zealand waters, to prevent seabird mortalities.

The midwater trawls come in a wide range of sizes measured by either headline length or headline opening (opening from 25–75m) and can be used in pelagic or semi-pelagic mode. All are constructed of synthetic materials with "rope" construction in the fore-panels mesh in the body and with floats on the headline to open the net. Mesh sizes range from 65 metres to 100 mm.

"Kapron" trawls are used by Russian/Ukraine fleet. The nets are of nylon construction with 12 m

maximum mesh size and a 60 m maximum opening. They are a multipurpose trawl used on a wide variety of species and again can be operated pelagically or semi-pelagically if seabed conditions are smooth.

Regulations prescribe a minimum mesh size of 60 mm for cod end for trawls in the southern blue-whiting fisheries.

Table 4: Number of vessels by gear and target fishery for southern blue whiting (SBW) stocks that reported landings during the year April 2008 – 31 March 2009.

Southern blue whiting fishery fleet characteristics and particulars						
Factory Trawlers	Number in fleet	Duration of activity	Products produced	Approximate catch volume per vessel (green tonnes)	Nationality	
Fillet	6	seasonal Aug-Oct	frozen at sea H&G, block, mince, fishmeal	1-2,000		NZ
surimi	1	seasonal Aug-Oct	frozen at sea surimi	6-7,000		Japanese
H & G with meal plant	6	seasonal Aug-Oct	frozen at sea trunks, fishmeal	3-6,000		Ukrainian
H & G	3	seasonal Aug-Oct	frozen at sea trunks	2-5,000		Korean
Total	16					

5 STOCK ASSESSMENT AND STOCK STATUS

Hanchet (1998, 1999) reviewed the stock structure of southern blue whiting. He examined historical data on southern blue whiting distribution and abundance, reproduction, growth, and morphometrics. There appear to be four main spawning grounds of southern blue whiting on the Bounty Platform, Pukaki Rise, Auckland Islands Shelf, and Campbell Island Rise. There are also consistent differences in the size and age distributions of fish, in the recruitment strength, and in the timing of spawning between these four areas. Multiple discriminant analyses of data collected in October 1989 and 1990 showed that fish from Bounty Platform, Pukaki Rise and Campbell Island Rise could be distinguished on the basis of their morphometric measurements. The SBW Plenary concluded that this constitutes strong evidence that fish in these areas return to spawn on the grounds to which they first recruit. No genetic studies have been carried out, but given their close proximity, it is unlikely that there would be detectable genetic differences in the fish between these four areas.

For the purposes of stock assessment it is assumed that there are three stocks of southern blue whiting with fidelity within stocks: the Bounty Platform stock (SBW 6B), the Pukaki Rise stock (SBW 6R), and the Campbell Island stock (SBW 6I). In many cases, the same performance indicators apply to all three stocks, but it is indicated where they do not. The lowest score must be used among the stocks where scores differ, if there is no plan to separate the catches through chain of custody.

A working group reviews the stock assessment and provides the resulting scientific advice. . The scientific information used in the decision making is reported in the annual plenary meeting. The decisions made and explanations for those decisions are also reported. For the quota management species such as southern blue whiting, this is predominantly the quotas set for each stock for the following year. However, decisions are also made on monitoring requirements for achieving fishery objectives and other related management issues relevant to the management plan.

The stock assessments depend to a large extent upon acoustic surveys and therefore a description of these data is given first.

5.1 Abundance indices

Details on data available for the assessment of these stocks is described by Hanchet and Dunn (2010).

The primary information on abundance for these stocks are the acoustic surveys, which provide a direct estimate of the biomass of the aggregations which are fished, and trawl surveys (Hanchet and Dunn 2010). These biomass estimates form the basis for the stock assessment. Due the southern blue whiting life history, the aggregations can change dramatically in size from year to year, making surveys particularly important for the harvest strategy.

During the 2009 and 2010 seasons, new acoustic surveys of the Bounty Platform were undertaken (O'Driscoll 2011a, 2011b) using three industrial vessels (2009) and one industrial vessel (2010). Previous acoustic surveys were carried out in 2004, and 2006-2008, but used only the one vessel. The survey approach in all years has been consistent, with one vessel used in all surveys. Vessels were calibrated Simrad ES60 echosounders and hull-mounted 38 kHz transducers to conduct aggregation based surveys using an adaptive design attempting to cover all areas of high SBW density. In most years there were multiple snapshots of the same aggregation(s). In some years, several different aggregations were surveyed. The resulting data were used to provide absolute estimates of spawning abundance (Table 5; Table 6).

Similar surveys have been carried out on the three main stocks (6I, 6B and 6R) from 1993 until around 2000, when, because of the low catch limits on the Bounty and Pukaki stocks, the returns from

the fishery were too low to be able to afford such acoustic surveys and the time series was discontinued. Since then, industry vessels have undertaken surveys on Bounty (Table 5) and Pukaki Rise (2009 and 2010). Surveys of the Campbell Island Rise are relatively complete, this being the most heavily exploited stock. These surveys have been sufficient for a full stock assessment model. The absorption co-efficient and target strength relationship have recently been re-evaluated, which should improve the absolute biomass estimates.

Table 5: Estimates of biomass (t) for age 4+ fish from research acoustic surveys of the Bounty Platform 1993-2001, and of spawning stock biomass (SSB) from acoustic estimates from FV Tomi Maru 87 2004-2010 (O'Driscoll 2011a). All estimates were calculated using a new absorption co-efficient and a new target strength relationship. Sampling CVs are given in parentheses. #, this estimate was not available in time for the 2010 stock assessment. Source: 87_SBW_2011.

Year	Age 4+ fish	SSB
1993	47 087 (64%)	-
1994	20 844 (25%)	-
1995	23 480 (24%)	-
1997	31 929 (32%)	-
1999	34 194 (73%)	-
2001	16 396 (36%)	-
2004	-	13 473 (69%)
2006	-	21 765 (12%)
2007	-	159 589 (19%)
2008	-	144 187 (34%)
2009	-	28 242 (21%)
2010#	-	27 782 (36%)

Table 6: Estimates of biomass (000 tonnes) for age 1, 2, 3 and 4+ fish from acoustic surveys of Bounty Platform, Pukaki Rise, and Campbell Island Rise, and CPUE indices for the Campbell Island Rise. The estimates were not complete for all areas as of 2009. (- no data. *Estimates include fish from outside the standard survey area. Source SBW_FINAL_11)

Year	Bounty Platform				Pukaki Rise				Campbell Island Rise				CPUE
	1	2	3	4+	1	2	3	4+	1	2	3	4+	
1986	-	-	-	-	-	-	-	-	-	-	-	-	1.00
1987	-	-	-	-	-	-	-	-	-	-	-	-	0.91
1988	-	-	-	-	-	-	-	-	-	-	-	-	0.88
1989	-	-	-	-	-	-	-	-	-	-	-	-	1.38
1990	-	-	-	-	-	-	-	-	-	-	-	-	1.06
1991	-	-	-	-	-	-	-	-	-	-	-	-	1.30
1992	-	-	-	-	-	-	-	-	-	-	-	-	0.60
1993	8.81	6.87	1.41	62.86	0.58	26.85	9.32	31.15	1.82	71.90	14.78	24.03	1.03
1994	0.09	5.87	32.07	27.67	0.01	1.19	6.36	35.97	0.33	12.26	139.55	28.84	1.19
1995	59.28	4.86	6.66	30.77	0.00	0.10	0.78	11.74	0.00	11.18	23.23	130.54	1.23
1996	-	-	-	-	-	-	-	-	-	-	-	-	2.28
Year	Bounty Platform				Pukaki Rise				Campbell Island Rise				
1997	1.68	4.14	24.60	37.52	0.02	2.84	0.86	34.09	-	-	-	-	2.28
1998	-	-	-	-	-	-	-	-	2.28	13.14	28.02	167.67	1.74
1999	0.43	0.75	4.97	42.72	-	-	-	-	-	-	-	-	2.55
2000	-	-	-	-	0.06	3.04	2.07	29.45	0.96	10.46	8.42	135.61	1.85
2001	0.14	2.55	6.01	21.68	-	-	-	-	-	-	-	-	1.83
2002*	-	-	-	-	-	-	-	-	3.06	3.83	11.84	152.18	1.94
2004*	-	-	-	-	-	-	-	-	1.51	17.33	34.53	56.20	-
2006*	-	-	-	-	-	-	-	-	1.07	19.81	9.90	80.34	-
2009	-	-	-	-	-	-	-	-	0.00	110.25	115.94	92.60	-

A standardised commercial CPUE analysis has been carried out 1990-2009 (Hanchet and Dunn 2010).

In the past there has been concern that because of the highly aggregated nature of the fishery, and the associated difficulty in finding and maintaining contact with the highly mobile schools in some years, the CPUE series may not be monitoring abundance. The indices have therefore not been used in the stock assessment since 1998. Although these indices have been rejected by the WG as indices of abundance and not used in the assessment, they are still considered to provide information on trends in abundance.

Trawl survey estimates for SBW on the Auckland Islands Shelf, Campbell Island Rise, and Pukaki Rise are available for 1991 to 2009. Although the surveys are not designed to monitor SBW, the biomass estimates for the latter two areas generally had moderate noise, showed some consistency between years, and the trends showed some correspondence with biomass trajectories from stock assessments. Recent increasing trends in trawl survey biomass on both the Campbell Island Rise and Pukaki Rise are consistent with the recent increase in biomass from acoustic indices and increase in catch rates on these stocks. While this does not provide a precise stock status, it does confirm that the stock is at a very low risk of being fished below the target level (40% B₀). Additional survey stations have recently been included for the core Pukaki Rise.

5.2 Stock Assessment

(i) Campbell Island Rise (SBW 6I)

The stock assessment model and estimation

For a full description of the stock assessment model see Dunn and Hanchet (2011). The model partitions the Campbell Island stock into two sexes and age groups 2–11, with a plus group at age 11. There are two time steps in the model (Table 7). In the first time step 90% of natural mortality takes place. In the second time step, fish ages are incremented; the 2-year-olds are recruited to the population, which is then subjected to fishing mortality; and the remaining 10% of natural mortality.

Table 7: Annual cycle of the stock model, showing the processes taking place at each step, and the available observations. Fishing mortality (F) and natural mortality (M) that occur within a time step occur after all other processes. M, proportion of M occurring in that time step.

<i>Period</i>	<i>Process</i>	<i>M</i>	<i>Length at age</i>	<i>Observations</i>
1. Nov–Aug	Natural mortality	0.9	–	–
2. Sep–Oct	Age, recruitment, F, M	0.1	Matrix applies here	Proportion at age, acoustic indices

The model assumes that the fishing selectivity after age 4 is 1.0, and estimates selectivity for each sex for ages 2 to 4. Selectivities were assumed constant over all years in the fishery, and hence there was no allowance for annual changes in selectivity. The stock recruitment relationship was assumed to be Beverton-Holt with a steepness of 0.9, with the proportion of males at recruitment (at age 2) assumed to be 0.5 of all recruits. Year class strengths for the years 1977–2007 were parameterised in the model such that the mean for the years 1977–2007 was assumed to equal one. The selectivity and maturity ogives are estimated separately. The maximum exploitation rate (U_{max}) was set at a value of 0.7. Selectivity was allowed to adjust over years. Lengths-at-age were converted to weights-at-age in the model using the length-weight relationship given in Table 1.

The assessment used data from 1979–2009 consisting of catch history, proportion-at-age, and acoustic survey data up to and including the 2009 season. The primary data sources on abundance were the R.V. *Tangaroa* wide area acoustic surveys carried out from 1993 to 2009 and proportion-at-age data from 1979 to 2009. The main information on recent stock size came from the 2009 survey, which had the highest adult biomass and second highest estimate of immature fish from the entire series.

Acoustic biomass estimates of southern blue whiting available on Campbell Island Rise during the fishing season were available from a wide area survey series conducted by the R.V. *Tangaroa* in the

years 1993–1995, 1998, 2000, 2002, 2004, 2006 and 2009 (Table 8; Hanchet and Dunn 2010). Summer (1991-1993, 2000-2009) and autumn (1992, 1993, 1996, 1998) trawl survey indices were also available. Information on population components of the abundance indices and catches were available from sampling for age and sex in each year.

Lognormal errors, with known CVs were assumed for the relative biomass and proportions-at-age data. The CVs available for these data allow for sampling error only. However, additional variance assumed to arise from differences between model simplifications and real world variation, was added to the sampling variance. The additional variance, termed process error, was estimated in an initial run of the model using all the available data.

Table 8: Decomposed biomass estimates (t) and CVs by survey and age group used for the Campbell Island Rise stock assessment.

Year	<u>Age 1</u>		<u>Age 2</u>		<u>Age 3</u>		<u>Age 4+</u>	
	Biomass	c.v.	Biomass	c.v.	Biomass	c.v.	Biomass	c.v.
1993	206	1.76	107 192	0.28	13 396	0.23	16 784	0.25
1994	699	0.57	19 634	0.29	168 006	0.32	23 213	0.28
1995	0	–	17 269	0.27	27 952	0.21	124 892	0.25
1998	8 678	0.25	20 895	0.15	35 579	0.12	139 388	0.18
2000	2 443	0.38	15 606	0.16	8 785	0.16	110 931	0.17
2002	13 436	0.38	4 609	0.65	10 632	0.64	103 422	0.68
2004	3 144	0.65	24 380	0.15	36 683	0.30	39 007	0.39
2006	2 230	0.32	27 933	0.23	10 199	0.34	56 206	0.32
2009	0	–	110 250	0.22	115 944	0.26	92 598	0.27

Model parameters were estimated using Bayesian methods implemented by the NIWA stock assessment program CASAL v2.22 (Bull *et al.* 2009). For initial runs only the mode of the joint posterior distribution was sampled. For the final runs presented here, the full posterior distribution was sampled using Markov Chain Monte Carlo (MCMC) method, which included tests for convergence.

Prior distributions and penalty functions

The assumed prior distributions used in the assessment are given in Table 9. Most priors were uninformative, and had wide bounds. These effectively provide limits on parameter values, but would be uninformative on estimates otherwise. Log-normal and normal priors were used for some parameters, which would be informative. However, the hyper-parameters used were justified and represent considerable improvement over fixed parameter values used in older assessment methods.

Table 9: The distributions, priors, and bounds assumed for the various parameters being estimated in the Campbell Island Rise stock assessment. The parameters are mean and CV for lognormal; and mean and s.d. for normal. *The prior for the adult (4+) acoustic q used for a sensitivity run. The process errors were fixed at their MPD values when carrying out the MCMCs. Source: Dunn and Hanchet (2011)

Parameter	N	Distribution	Values		Bounds	
			Mean	CV / s.d.	Lower	Upper
B_0	1	Uniform log	–	–	30 000	800 000
Initial population (by sex)	10	Uniform	–	–	5e5	1e10
Male fishing selectivity						
Age-based	2	Uniform	–	–	1	20
Length-based	2	Uniform	–	–	20	50
Female fishing selectivity						
Age-based	2	Uniform	–	–	1	20
Length-based	2	Uniform	–	–	20	50
Selectivity shift	3	Uniform	–	–	0.001	100
Year class strength	31	Lognormal	1.0	1.3	0.001	100
Acoustic catchability q						
Age models (2+) / (3+)	1	Uniform	–	–	0.1	2.8
Age(4+) / Category models	1	Lognormal	1.0	0.2	0.1	2.8
Trawl selectivity						
Male / Female	2	Uniform	–	–	1	20
Trawl catchability	1	Uniform	–	–	0.01	1.0
Natural mortality (average)	1	Lognormal	0.2	0.2	0.075	0.325
Natural mortality (sex difference)	1	Normal	0.0	0.01	-0.05	0.05

Analytical Results

Two base case models were considered for the assessment using age-based (model 3.2) and length-based fishing Selectivities (model 3.3; Table 10). Estimates of initial (equilibrium) spawning stock biomass (B_0) were estimated at 375 500 t (95% C.I.s 323 760–456 830 t) for the age-based model and 334 230 t (291 510–409 910 t) for the length-based model. The corresponding estimates of B_{2009} (% B_0) were 40% (28–54%) and 41% (27–56%). These median estimates of B_0 are about 50% higher than previous estimates of B_0 from this stock, primarily due to the strong 2006 and 2007 year classes which are about to enter the fishery. An acoustic survey of this stock is planned for September 2011 and the strength of these year classes will be better known after the results have been analysed.

Two sensitivities were also carried out for the assessment, which have different assumptions which test the uncertainty in the assessment (Table 10). The first modelled the acoustic biomass estimates as maturity categories rather than as biomass at age. Estimates of key model parameters such as B_0 , B_{2009} , and B_{2009} (% B_0) were similar, but slightly lower than the comparable base case model. However, the fits to the acoustic indices for this model appeared substantially worse because it is not possible to fit the selectivities to finer detail in the data.

The second sensitivity modelled observations from sub-Antarctic trawl survey biomass and age frequencies time series. Although the fits suggested some consistency in biomass estimates between the summer series and the model estimates, in general the trawl survey underestimated biomass at low stock sizes and overestimated biomass at high stock sizes. Dunn and Hanchet (2011) concluded that this time series was not particularly useful for monitoring abundance in its present form.

In its review, the working group chose the age based selectivity model (3.2) as the base run and the length based selectivity model (3.3) as the sensitivity for scientific advice.

Table 10: Model run labels and descriptions for the model runs.

Model type	Model label	Description
Exploratory Models	1.2	Age-based fishing selectivity
	1.3	Length-based fishing selectivity
	1.4	Age-based fishing selectivity with annual selectivity shifts
Final models	3.2	Age-based fishing selectivity with estimated M
	3.3	Length-based fishing selectivity with estimated M
Sensitivity models	4.2	Run 3.2 but with acoustic categories
	5.2	Run 3.2 but with the summer trawl survey indices

Comparisons among all models suggest that the stock is safely above the limit reference point (assumed 20% B_0 ; Table 11; Figures 2 and 3). The fishery depends upon strong year classes (Figure 4), which affect catches and management of the stock. Since 1996, the fishery has been operating with a fairly constant exploitation rate (Figure 5). The two base runs gave different results primarily due to the different way they handled selectivity, but neither model was clearly better than the other.

Projections were made assuming fixed catch levels of between 23 000t and 40 000t per year using the MCMC samples (Figure 3; Table 12). Recruitments were drawn randomly from the distribution of year class strengths estimated by the model. The model suggested that the stock would be very unlikely to fall below the limit if catches were set within this range.

Table 11: Maximum posterior density point estimates of equilibrium (B_0), B_{1979} , and current biomass for model 3.2 and the sensitivity model runs. Figure 2 shows MCMC results which are more reliable than point estimates.

Model	B_0	B_{1979}	B_{2009}	$B_{2009} (\%B_0)$
3.2	418 160	89 620	128 010	30.6
3.3	385 940	86 890	113 860	29.5
4.2	346 420	98 200	95 590	27.6
5.2	376 790	92 100	104 950	27.9

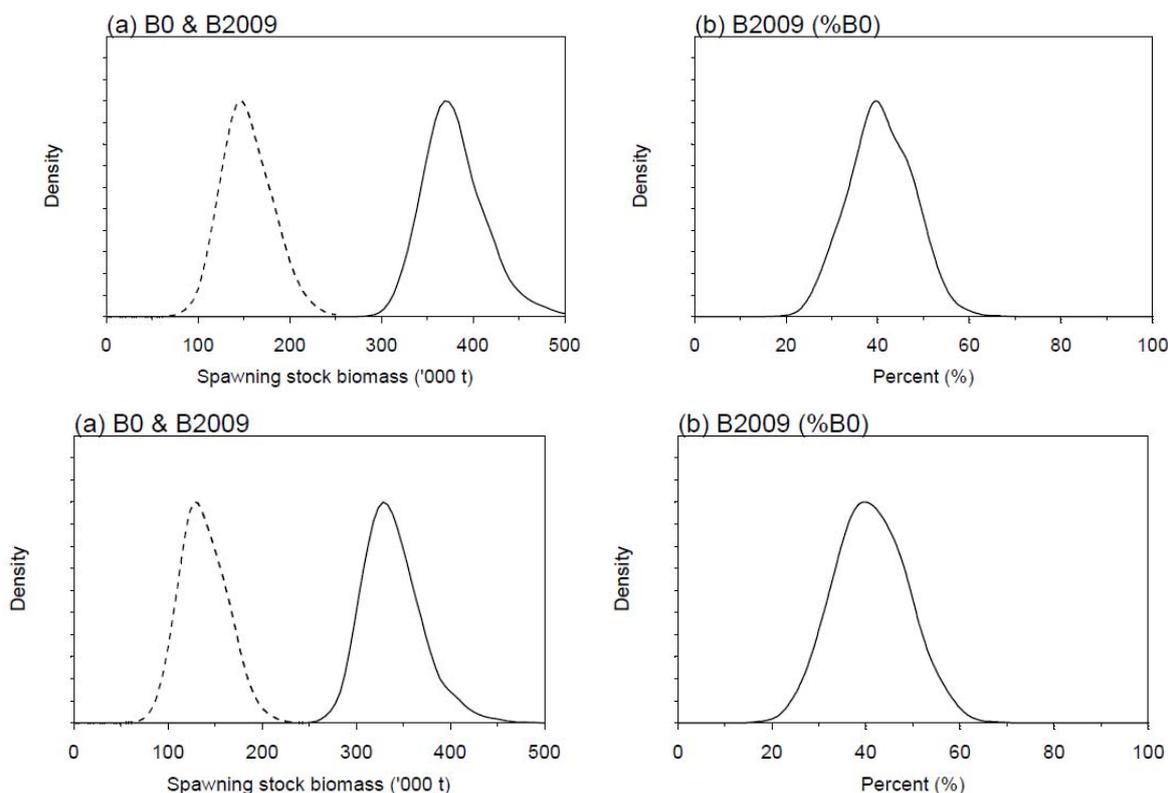


Figure 2: Posterior distributions for B_0 and B_{2009}/B_0 for models 3.2 (top) and 3.3 (bottom).

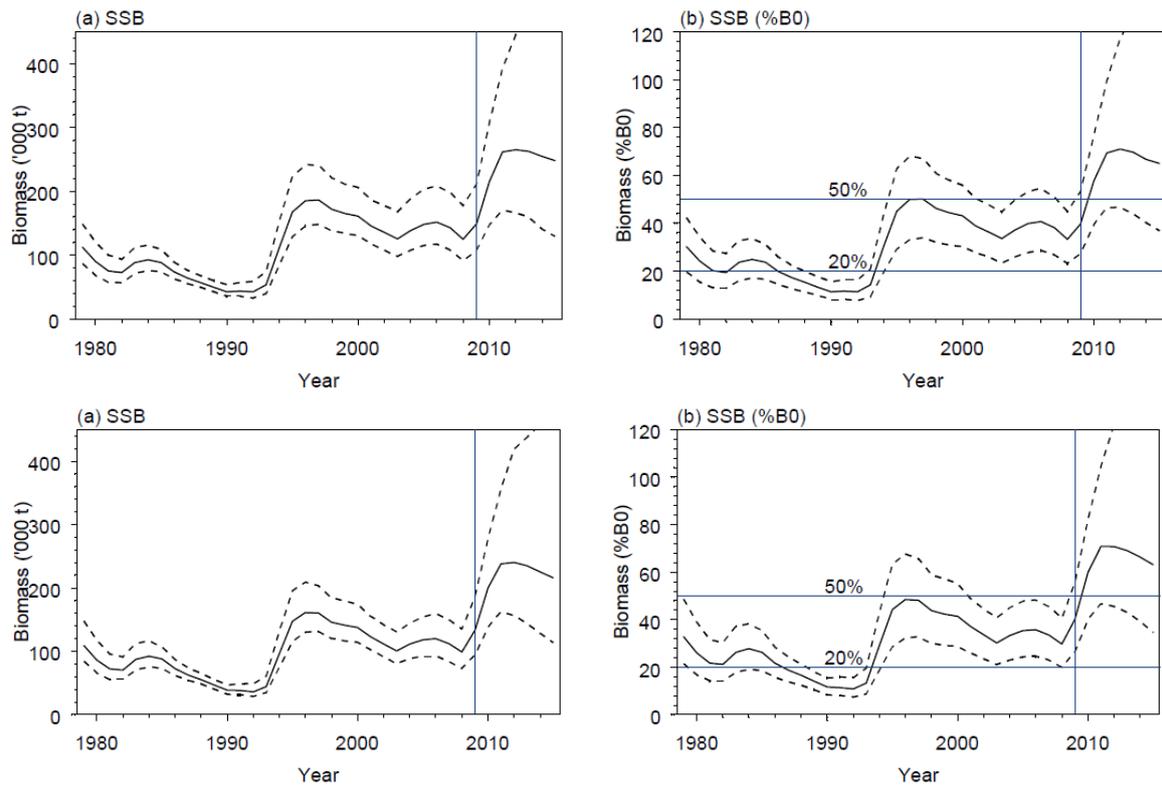


Figure 3: Time series estimates of absolute biomass and relative biomass for posterior with 95% credible intervals for model 3.2 (top) and 3.3 (bottom). The projection from 2009 assumes a constant catch of 23 000t.

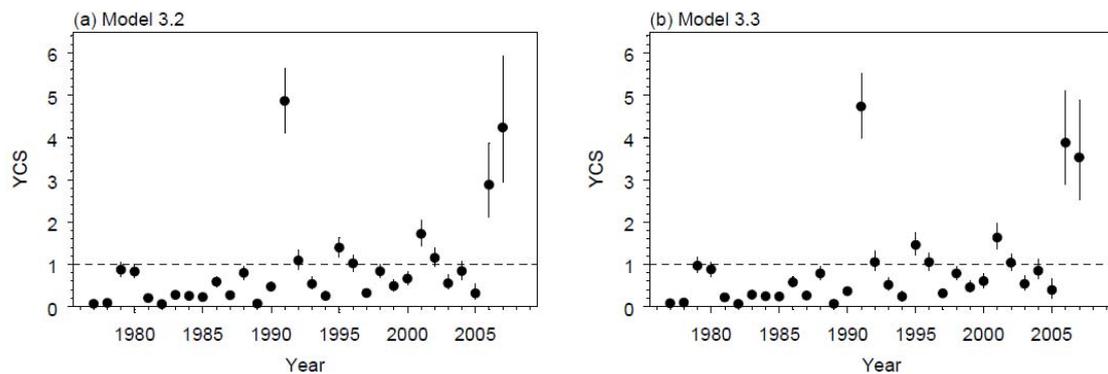


Figure 4: MCMC posterior plots of estimated year class strengths for (a) model 3.2 and (b) model 3.3.

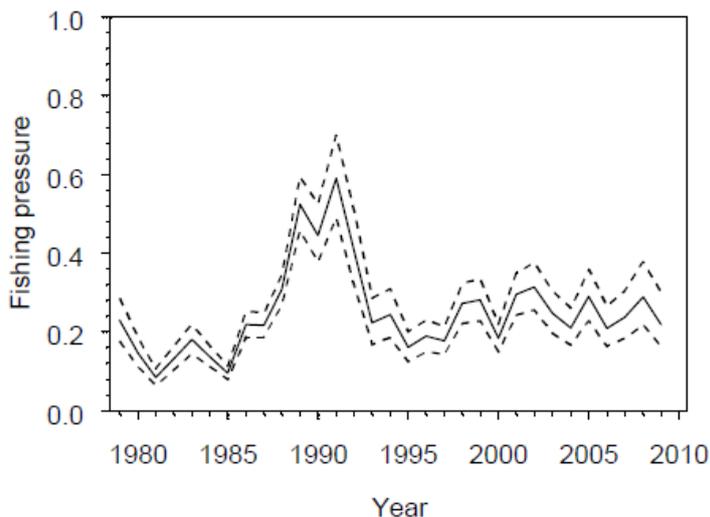


Figure 5: Exploitation rate for the base run (model 3.2).

Table 12: Probability that the projected mid-season spawning stock biomass (SSB) for 2010-2015 will be less than the limit reference point base and the median SSB for the base runs over a range of constant catch scenarios.

Catch (t)	Model	Pr(SSB < 0.2B ₀)						Median SSB (%B ₀)					
		2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
23000	3.2	0.00	0.00	0.00	0.00	0.00	0.00	57.6	69.4	71.0	69.7	66.7	65.0
	3.3	0.00	0.00	0.00	0.00	0.00	0.00	59.9	70.8	70.7	69.0	66.3	63.2
30000	3.2	0.00	0.00	0.00	0.00	0.00	0.00	57.6	68.5	68.4	65.4	60.8	57.8
	3.3	0.00	0.00	0.00	0.00	0.00	0.01	59.9	69.9	67.8	64.3	60.1	55.4
35000	3.2	0.00	0.00	0.00	0.00	0.00	0.01	57.6	67.9	66.5	62.2	56.7	52.6
	3.3	0.00	0.00	0.00	0.00	0.00	0.02	59.9	69.2	65.6	60.9	55.4	50.0
40000	3.2	0.00	0.00	0.00	0.00	0.01	0.04	57.6	67.2	64.5	59.1	52.5	47.7
	3.3	0.00	0.00	0.00	0.00	0.01	0.07	59.9	68.5	63.4	57.4	50.9	44.5

For a previous stock assessment, estimates of sustainable yields have been calculated for the Campbell Island Rise stock. The stochastic simulation method of Francis (1992) was used to estimate MAY and CAY subject to the constraint that spawning stock biomass should not fall below 20% of B₀ more than 10% of the time. The estimates of B_{MAY}, MAY, and CAY₂₀₀₆₋₀₇ are given for the Campbell Island stock in Table 13. Note that unlike the short term risks presented in Table 12, these are fixed long term yields which would not respond to fluctuations in biomass.

Table 13: Yield estimates (MAY and CAY) and associated parameters.

Model run	B _{MAY} (%B ₀)	MAY (t)	U _{CAY}	CAY ₂₀₀₅₋₀₆ (t)
Campbell Island Rise	34	18 600	0.20	16 400

(ii) Bounty Platform stock (2010 assessment)

The most recent assessment was completed in 2010 and included data up to and including the 2009 season. It differs from the previous (2004) assessment primarily in the inclusion of the time series of industry based acoustic aggregation surveys from 2003 to 2009 as well as proportion-at-age data from 1990 to 2009.

The modelling approach and structure of the model was very similar to that used for the Cambell Rise stock above. Information on this assessment is not repeated here, but more detail is available from plenary report 87_SBW_2011, if required.

The model struggled to provide a satisfactory fit to either the aggregation acoustic survey estimates or the proportion-at-age data. The model is subject to on-going development, including but not limited to trying to explain the large variation in biomass estimates between years and in the age structure. The available stock assessments are dependent on underlying assumptions, and the working group decided that the model could be over-parameterised (fits the data adequately, but has reduced capability at prediction), and the full uncertainty may not be adequately reflected in the quantitative outputs.

Table 14: Bayesian estimates of median and credible intervals of (B_0), initial, and current biomass for the model runs. The models represent a range of runs with different assumptions with more or less informative priors on catchability (models 3 and 4) and age or size based selectivity (models .4 and .6 respectively).

Model	B_0		B2009		B2009 (% B_0)	
Model 3.4	60 710	(53 270-72 930)	105 020	(88 470-125 170)	173	(143-210)
Model 3.6	62 100	(55 720-70 550)	150 420	(132 990-171 920)	242	(206-283)
Model 4.4	73 180	(61 030-94 010)	82 080	(51 190-130 270)	111	(74-162)
Model 4.6	69 580	(60 150-82 830)	92 290	(57 510-138 330)	132	(88-186)

After the modelling work was completed, an additional aggregation survey was carried out on the Bounty Platform in August 2010 (see Table 5). Two snapshots were completed during the survey which appeared to fully cover the spawning aggregation. The estimate of adult biomass from the two snapshots was similar to that recorded for 2009 and significantly lower than the estimate from previous surveys and the stock assessment. O’Driscoll (2011a) explored the reasons for the much lower observed biomass estimates from the surveys in 2009 and 2010 compared with 2007 and 2008, including changes in survey methodology, equipment (including calibration), and changes in timing and extent of survey coverage, but could find no clear reason for these low estimates. Given the conclusions of O’Driscoll (2011a) and the low biomass estimates in 2009 and 2010, the Working Group concluded that the estimates of current biomass calculated from the model were likely to be higher than reality, and that further development of the model will be needed to resolve the inconsistency. . It may not be possible in the short term to develop the model to address these issues, and they may only be resolved in the longer term through fisheries research and extending the data time series. The CASAL model used appears to work reasonably well in “normal” years (see SBW6I), but may not be able to predict biomass well when very large spawning biomass is detected. This may only be addressed by management actions reducing risk through precautionary changes in the TAC. If the fishery would plan to take a higher proportion of the stock during these events, a better understanding of the population dynamics would be required

Because of the perceived problems with the model, the Working Group decided to use the lower

estimates from the recent acoustic surveys as the basis for management advice. This is clearly precautionary in the interim while the stock assessment is improved.

Although assessment model estimates of current biomass are not used directly in determining appropriate catch levels, the assessment model is still used for projections and to estimate the reference points. The reference points are based on the equilibrium biomass should no fishing be occurring (B_0). In estimating this value, the Working Group have made a point of excluding the high recruitment in 2002, which essentially lowers the mean B_0 estimate.

Therefore, in order to provide advice on sustainable yields for the Bounty Platform stock for the 2011-12 fishing year, the Working Group agreed to use the recent aggregation acoustic surveys as the basis for determining yield estimates for management of the fishery. To provide the full range of uncertainty it agreed to provide estimates of biomass and yield based on the results of each of the 2007, 2008, 2009, and 2010 surveys (see Table 15).

In making these calculations the Working Group assumed (Dunn and Hanchet 2010):

- a. That the acoustic survey biomass estimate in each year was equal to midseason vulnerable biomass available in each year and had lognormally distributed errors.
- b. That the 80% quantiles (i.e., the 10th and 90th percentiles) represent an adequate bound on the sampling uncertainty in the acoustic estimates.
- c. That an adequate representation of uncertainty in the target strength of southern blue whiting is ± 3 dB, which approximates to a doubling or halving of the resulting biomass calculated from the target strength relationship.
- d. That the combined effects of recruitment, the increase or change in mean weight from the growth of individuals, and natural mortality over a one year time frame are negligible and can be ignored.
- e. That the biomass was measured after half of the reported catch had been taken.
- f. That the maximum exploitation rate possible for the fleet in future years is 100%.

The appropriate exploitation rate for southern blue whiting is currently determined as 0.20 (i.e., the UCAY that was previously calculated in the stock assessment), which allows appropriate yields based on biomass estimates to be set.

(iii) Pukaki Rise stock

An assessment of the Pukaki Rise stock was carried out in 2002. More frequent assessments have not been considered necessary because the stock is considered to be lightly fished. The sSPA model was used to estimate the numbers at age in the initial population in 1989 and subsequent recruitment. The model estimates selectivity for ages 2, 3, and 4 and assumes that the selectivity after age 4 is 1.0. No stock-recruitment relationship is assumed in the sSPA.

Preliminary runs of the model were fitted to proportion-at-age data from 1989 to 2000, and the acoustic indices given in Table 6. The indices were fitted in the model as relative estimates of mid-season biomass, with the CVs as shown in Table 5. The proportion-at-age data likelihood is assumed to be multinomial with a median sample size of 50 (equivalent to a CV of about 0.3). Details of the input parameters for the initial and sensitivity runs are given in Table 15.

Table 15: Values for the input parameters to the separable Sequential Population Analysis for the initial run and sensitivity runs for the Pukaki Rise stock.

Parameter	Initial run	Sensitivity runs
-----------	-------------	------------------

M	0.2	0.15, 0.25
Acoustic age 3 and 4+ indices	0.3	0.1, 0.5
CV		
Acoustic age 1, 2 indices CV	0.7	0.5, 1.0
Weighting on proportion-at-age data	50	5, 100
Years used in analysis	1989–2000	1979–2000
Acoustic q	estimated	0.68, 1.4, 2.8

Biomass estimates in the initial run and also in the sensitivity runs all appeared to be over-pessimistic because the adult (4+) acoustic q was very high. For example, for the initial run, the 4+ acoustic q was estimated to be 2.7. The WG did not accept this initial run as a base case assessment, but agreed to present a range of possible biomass estimates. The Plenary also agreed to present a range, based on assumptions concerning the likely range of the value for the acoustic q .

Bounds for the adult (4+) acoustic q were obtained using the approach of Cordue (1996). Uncertainty over various factors including mean target strength, acoustic system calibration, target identification, shadow or dead zone correction, and areal availability were all taken into account. In addition to obtaining the bounds, a 'best estimate' for each factor was also calculated. The factors were then multiplied together. This independent evaluation of the bounds on the acoustic q suggested a range of 0.65–2.8, with a best estimate of 1.4. Clearly the q from the initial run is almost at the upper bound and probably outside the credible range. When the model was run fixing the acoustic q at 0.65 and 2.8, estimates of B_0 were 18 000 t and 54 000 t, and estimates of B_{2000} were 8000 t and 48 000 t respectively (Table 16; Figure 6). Within these bounds current biomass is greater than B_{may} . Assuming the 'best estimate' of q of 1.4 gave B_0 equal to 22 000 t and B_{2000} equal to 13 000 t.

This stock has been only lightly exploited since 1993–2008. In 2009 and 2010, catches have increased on this stock to around 4500–4800 t, which could potentially have a greater impact on the stock. Based on the range of stock biomass modelled in the assessment, the average catch level until 2008 (380 t) is unlikely to have made much impact on stock size. A more intensive fishery or more consistent catches from year to year would seem to be required to provide any contrast in the biomass indices.

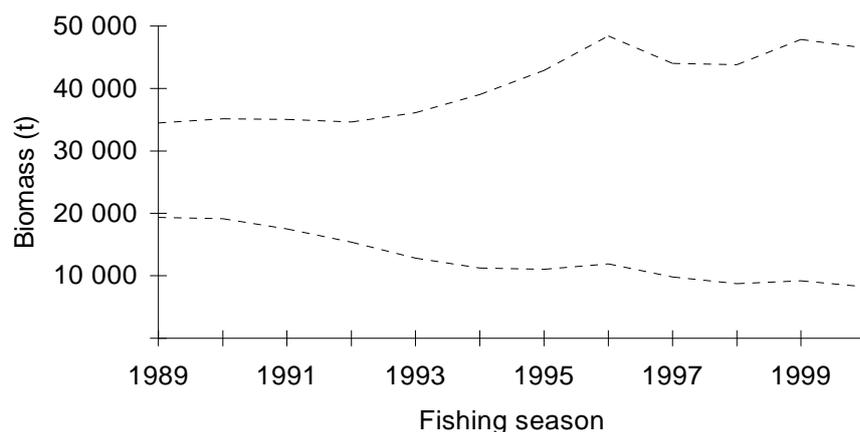


Figure 6: Mid-season spawning stock biomass trajectory bounds for the Pukaki Rise stock. Bounds based on acoustic q of 0.65 and 2.8.

Table 16: Parameter estimates for the Pukaki stock as a result of fixing the adult 4+ acoustic q at various values. B_{mid} , mid-season spawning stock biomass; $N_{2,1992}$ size of the 1990 year class (millions). All values in $t \times 10^3$.

Fixing the acoustic q B_0 value	$B_{mid 89}$	$B_{mid 00}$	$N_{2,1992}$	$B_{mid 00}$ ($\%B_0$)	$B_{mid 00}$ ($\%B_{may}$)
$q = 0.65$	54	36	48	63	88
$q = 1.4$	22	22	13	28	58
$q = 2.8$	18	19	8	23	44

These observations seem to be confirmed by survey estimates of biomass, which are used to monitor trends in stock size. Although trawl survey and CPUE indices are not considered highly accurate indicators (Dunn and Hanchet, 2010), they are appropriate considering more costly monitoring has probably not been justified considering the risks to the stock.

Trends in trawl survey biomass estimates for the Pukaki Rise for 1991 to 2009 are consistent with biomass trajectories from stock assessments. Recent increasing trends in trawl survey biomass on both the Campbell Island Rise and Pukaki Rise are consistent with the recent increase in biomass from acoustic indices and increase in catches on these grounds respectively. However, an acoustic survey of Pukaki Rise biomass was conducted in 2009. Reports of large aggregation and good fishing in 2009 were not supported by high acoustic abundance estimates (O'Driscoll and Dunford 2010b), indicating that caution is warranted in using these data. However, the acoustic data did confirm that the catch limits had been effective in conserving this resource.

Without a recent analytical stock assessment, it could have been proposed to use the Risk Based Framework (RBF). This was not considered appropriate because information (direct acoustic estimates of biomass) was adequate to score the fishery using the standard approach. In addition, RBF was not considered appropriate for a large industrial fishery as potentially could operate on these stocks. We considered that some sort of monitoring of stock status was required in all cases, and the frequency and precision of such monitoring should reflect the risk to the resource. We also noted that a harvest control rule is required (PI 1.2.2) even where RBF is used.

5.5 Stock status

Campbell Island stock

The stock in 2009 was considered likely to be at or above the target level (40-60% of B_0 compared to the target of 40%), and very unlikely to be below the limit reference point (20% B_0) (Figure 2 and 3). An incoming strong year class should enter the fishery over the next few years. The TACC has been increased to 30 000 t for 2011, but remains consistent with the precautionary level tested through the projections. At this level of catch, the biomass is projected to increase over the next few years, and the probability that the biomass will drop below $B_{20\%}$ 2010-2015 is projected to be less than 1% for the base model (Table 12).

Bounty Platform stock

Industry aggregation acoustic surveys carried out in 2007 and 2008 suggested that 2002 was an extremely strong year class, and suggested biomass of 140-160 000 t. However, the surveys in 2009 and 2010 have suggested a biomass of 25-30 000 t. The observed decline is too great to be explained solely by fishing and average levels of natural mortality of the 2002 year class and it is only possible to speculate on the causes of this decline. Suggested causes include an unusually high natural mortality may have occurred.

A matrix of biomass estimates was presented to the Working Group based on the interpretation of acoustic survey as absolute abundance under a range of assumptions. It was determined that the biomass in 2009 was unlikely (< 40% chance) to be below the limit reference point ($B_{20\%}$). The stock has increased with the entry of the strong 2002 year class, but has unexpectedly declined since 2008. If these biomass estimates are biased, it would underestimate the stock size. As a result of the lower biomass estimate, the TACC was reduced from 14 700 to 7 000 t from 1 April 2011. Another stock assessment was planned for 2012.

Pukaki Rise stock

The population dynamics stock assessment of this stock has not been updated since 2002. Catch levels from 2002-2007 (average 380 t) are unlikely to have made much impact on stock size. Recently catches have increased, but this is at the same time the available indicators show the stock is increasing in size. This stock has been only lightly exploited since 1993, and the available, but limited, evidence indicates that it is likely to be above the level that will support the MSY.

Table 17: Summary of TACCs and preliminary estimates of landings (t). (1 April–31 March fishing year).

Area	2009–10	2009–10
	Actual TACC	Landings
Campbell Island	23 000	20 870
Bounty Platform	14 700	13 912
Pukaki Rise	5500	4 523

6 FISHERY MANAGEMENT FRAMEWORK

Since 1986, the major commercial fisheries in New Zealand fisheries waters, have been managed through a quota management system (QMS) based on individual transferable quotas (ITQs). Within the QMS, fisheries sustainability objectives are achieved by setting a total allowable catch (TAC) that is consistent with the productivity of a fishery. TACs can be reviewed on an annual basis and a total allowable commercial catch (TACC) is then determined taking into account any recreational and customary harvesting. The TACC for each fishery is then apportioned to quota owners as an annual catch entitlement (ACE) according to the percentage of quota they hold for a fishery. Fishers are required to hold sufficient ACE to cover all target and bycatch species caught, or alternatively, to pay deemed values. Annual catch entitlements are widely traded to enable fishers to balance catches taken against quota held. Total catch limits may also be set for some commercial fisheries not managed within the QMS. A fishing permit is required to fish for QMS and non-QMS species, all fishing vessels must be registered, and all fishing permit holders are required to furnish accurate monthly returns on locations fished, fishing gear used, catches of main species, information on processing and landing of catches and to reconcile these against ACE.

6.1 Fishing Rights, Licensing, and Subsidies

Vessel Registration

Section 103 of the Fisheries Act 1996 requires vessels to be registered in the Fishing Vessel Register in order to take fish, aquatic life, or seaweed for sale, in New Zealand fisheries waters.

Permitting of Commercial Fishers

Any person who wishes to take fish for the purpose of sale can only do so under the authority of a commercial fishing permit issued under the Fisheries Act 1996 (the Act). Commercial fishers are required to:

Fish from a registered fishing vessel.

Keep records of all catch, effort and landings.

Report regularly to the Ministry their effort and landings.

Not discard quota species (with limited, documented exceptions and these do not include southern blue whiting).

Land catch to approved licensed fish receivers (LFRs) (with limited, documented exceptions).

Furnish Monthly Harvest Returns (MHRs) to MFish detailing all the catches made for that month by the permit holder, as they may fish from more than one vessel.

Foreign Charter Vessels (FCV)

Foreign Charter Vessels are vessels owned or operated by an overseas entity under contract or charter to a New Zealand company. While FCVs remain flagged to a foreign State during the time of the charter, their registration status makes them subject to New Zealand's law and fisheries management regime, including an obligation to meet all the requirements listed above, while fishing in New Zealand waters.

Before a FCV can take fish commercially the New Zealand party in whose name the vessel is registered must also hold a commercial fishing permit that has been issued under section 91 of the Fisheries Act 1996. All products and fishing activities on board such vessels are the responsibility

of the New Zealand permit holder.

6.2 Fishing Locations

This assessment applies to southern blue whiting caught in SBW6B, SBW6I and SBW6R. These areas are all within New Zealand's EEZ.

6.3 Administrative Arrangements and Boundaries

The role of the Ministry of Fisheries (MFish) is to act as the Government's principal advisor on NZ fisheries management and the impact of fishing on the aquatic environment including issues that may impact on the continued availability of fisheries resources, and their interaction with the use of other marine resources.

MFish is the government agency responsible for the conservation and management of fisheries. It is charged with consistently monitoring fisheries resources and making timely and appropriate policy advice on all aspects of fisheries management to the Minister of Fisheries. MFish is also responsible for carrying out the Government's policies to manage and to conserve fisheries. The Department of Conservation (DOC) is responsible for the conservation of protected marine species, including marine mammals and seabirds within the EEZ

The NZ Seafood Industry Council Limited (SeaFIC) provides representation and promotes the interests of the seafood industry through the provision of economic information and advice, coordinating industry resources, and enhancing the industry's profile in the community.

The Deepwater Group Limited was formed in September 2005, by owners of quota in New Zealand's EEZ fisheries. It is a non-profit organisation, and works closely with government and other interest groups to ensure New Zealand gains the maximum economic yield from New Zealand's deepwater fisheries resources managed within a long-term, sustainable framework. There is a partnership approach to fisheries management between the Deepwater Group and MFish. The partnership agreement sets out common strategic and operational objectives and an agreed joint workplan to ensure New Zealand's deepwater fisheries are managed sustainability.

6.4 Legislation and Regulation

The Fisheries Act 1996 provides the legislative framework for NZ fisheries management, within New Zealand's fisheries waters out to 200 nm and for New Zealand flagged vessels and nationals on the high seas. The purpose of the Fisheries Act 1996 is to provide for utilisation of fisheries resources while ensuring sustainability. In giving effect to the purpose of the Act, decision makers are required to take into account environmental and information principles and to act consistently with the Treaty of Waitangi (Fisheries claims) Settlement Act 1992 and international obligations.

Among other things, the Fisheries Act 1996 sets out New Zealand's fisheries management regime; provisions relating to access to fisheries, including foreign-licensed access; a high-seas fishing regime; record keeping, reporting and disposal of fish provisions; and a system of offences and penalties

Through the Fisheries Act 1996 and associated regulations, stringent controls and penalties are imposed on fishing activities within New Zealand fisheries waters and on New Zealand flagged vessels and nationals operating on the high seas. All New Zealand vessels are required to be registered. All fishers operating within New Zealand waters must be authorised by a New Zealand fishing permit

6.5 Harvest Controls

Under the New Zealand Quota Management System (QMS), the Minister of Fisheries is responsible for ensuring that fish stocks are maintained at or above a level that can produce the Maximum Sustainable Yield (MSY). The MSY reflects the greatest yield that can be achieved over time while maintaining a stock's productive capacity, having regard to the population dynamics of the stock and any environmental factors that influence the stock. Controls are set so that the biomass level can support the MSY (B_{MSY}). This provides the conditions to maximise the yield of the fishery without compromising sustainability. Once the MSY is estimated, the TAC of a stock at that time can be determined.

Allocating the TAC

From the TAC an allowance is made, where relevant, to provide for recreational fishing, customary uses and all other fishing-related mortality of that stock. The remainder is available to the commercial sector as the Total Allowable Commercial Catch (TACC). This is the total quantity of each fish stock that the commercial fishing industry can catch for that year. Once the TACC is set the fishing rights are distributed to quota owners as Annual Catch Entitlement (ACE). Quota rights are held as percentage shares of the TACC and catching rights, which are generated from these annually, are allocated in kilograms.

Individual Transferable Quota (ITQ)

ITQ (quota) represents a property right entitling the owner to access a percentage share of the annual catching rights, in perpetuity. Quota can be traded and is allocated to permit holders following the introduction of a stock into the QMS. Quota generates ACE at the start of each fishing year. Quota share holdings are guaranteed by the Crown and are able to have mortgages and other securities registered against them. ACE is allocated proportional to the quota share held and the TACC. There is no compensation for reductions in TACC (and subsequently derived ACE holdings).

Annual Catch Entitlement (ACE)

ACE is the catching right generated each year from quota. At any stage during the fishing year a person is able to trade their ACE. ACE may be bought or sold without any encumbrance of catch. ACE is generated at the start of each new fishing year.

6.6 Monitoring, Control and Surveillance

New Zealand endeavours to deter fisheries related offending through effective monitoring provisions, successful prosecutions and strict, deterrent penalties. Penalties for fisheries related offences include fines, forfeiture of fish, vessels, other property and quota, and imprisonment. A number of Monitoring, Control and Surveillance (MCS) tools are used to control the activities of vessels fishing within New Zealand fisheries waters including:

- Fishing permit requirements
- Requirement to balance all catches of QMS species with ACE, or alternatively, to pay deemed values
- Fishing permit and fishing vessel registers
- Satellite-based Vessel Monitoring System (VMS) requirements
- Vessel and gear marking requirements
- Fishing gear and method restrictions
- Observer Programme
- Reporting (including catch and effort reporting) requirements
- Vessel inspections
- Control of landings (e.g. requirement to land only to licensed fish receivers)
- Record keeping requirements

- Auditing of licensed fish receivers
- Control of transshipments between vessels
- Monitored unloads of fish
- Information management and intelligence analysis
- Analysis of catch and effort reporting and comparison with VMS, observer, landing and trade data to confirm accuracy
- Boarding and inspection by fishery officers at sea
- Aerial and surface surveillance, and
- Any other measures agreed by Regional Fisheries Management Organisations (RFMOs) to which New Zealand is a signatory.

Reporting

New Zealand's fisheries management regime is supported by a comprehensive set of reporting regulations and recordkeeping regulations.

When fish is taken by a permit holder they must ensure that the appropriate reporting requirements are met. Catch effort returns must be completed, signed and supplied to MFish within the timeframes set in regulations.

Landing information is required from each registered fishing vessel once all fish and fish product has been landed to a Licensed Fish Receiver (LFR) following each fishing trip.

All permit holders are also required to supply a Monthly Harvest Return (MHR) by the 15th of the month following the month the catch was taken. The MHR lists, by fish stock, all fish taken in the month reported. This information is used in the balancing regime that generates deemed values. The information from this report is also reconciled against LFR records. It enables MFish to check against the information supplied on the catch effort forms to see if the fish taken are being reported as being taken from the actual areas.

The reporting regime also requires LFRs to report monthly to MFish all the fish species received during that month from each fisher (LFRR). This is an independent check on all fish landed from all vessels by commercial fishers. The information from these reports is used by MFish to cross-check the information provided by permit holders.

All returns are required to be furnished in specific timeframes. If permit or license holders do not furnish the necessary returns within the required timeframe an infringement penalty charge may be incurred.

The Fisheries Act 1996 puts a strict liability offence on any person who buys, sells or possesses fish, other aquatic life or seaweed, taken in contravention of the Act. Significant penalties are imposed on persons fishing commercially without a fishing permit. These include fines of up to \$250,000, imprisonment up to 5 years and forfeiture of gear, vessels, or vehicles used in the commission of the offence.

Unlike many of the commercial offences, which specify a certain sector as permit holders, any offences detected under this section are all inclusive of all persons in an attempt to include those persons dealing in fish product outside the law. The Act also makes it an offence to buy sell or possess fish that has been landed and not declared or reported as required.

6.7 Consultation and Dispute Resolution

Section 12 of the 1996 Fisheries Act includes a range of specific consultation requirements.

The Minister of Fisheries is required to consult with those classes of persons having an interest (including, but not limited to, Maori, environmental, commercial and recreational interests) in the stock or the effects of fishing on the aquatic environment in the area concerned;

Section 12 only relates to certain sections of the 1996 Act. However there are other sections of the 1996 Act that require the Minister or MFish Chief Executive to consult with stakeholders before making a decision.

The Ministry of Fisheries has a well-defined process for stakeholder consultation. The consultation process:

- Sets out best practice process for how MFish will meet its obligations under section 12 of the Fisheries Act 1996 and for other decisions requiring consultation with fisheries stakeholders;
- Helps to ensure a consistent approach across all MFish business groups when consulting with fisheries stakeholders; and
- Sets out minimum performance measures where appropriate, e.g., a minimum period for stakeholder consultation.

The consultation process standard includes the following:

- Identification of stakeholders “having an “interest” for consultation purposes,
- Time frame for consultation
- Notification of decision to stakeholders
- Monitoring, review and oversight

As part of the consultation process, stakeholders are given the opportunity to provide feedback on the delivery of the process itself. The feedback is evaluated and used to fine tune future consultation processes.

There are procedures and processes under Part 7 of the Fisheries Act for dispute resolution. However it does not seem to be widely used. Rather the consultation process is supposed to be an attempt to avoid unresolved dispute. In recent years industry has taken the Ministry to court in order to resolve disputes. However, the current Memorandum of Understanding between the Deepwater Group Ltd and the Ministry of Fisheries has produced better working relationships and thus far avoided the need to litigate.

7 ECOSYSTEM CHARACTERISTICS

This section provides background on the ecosystem components considered under Principle 2. It provides a general overview of the characteristics of the ecosystem within the New Zealand EEZ, and the information, studies and management that is being carried out. It should be noted that more detailed examinations of information are presented within the Scoring Guidepost table (Appendix A).

7.1 Ecosystem characteristics

The southern blue whiting fishery operates semi-pelagic gear, and hence habitat interactions will be concentrated on the pelagic environment. In this area, impacts are expected to be transient and negligible. However, interactions with the demersal habitat are known to occur as observations show that the gear may occasionally interact with the seabed, generally on setting and hauling. We therefore concentrate on the demersal habitat interactions, although compared to a fully demersal trawl gear; the footprint of the gear will be much reduced. Note that vulnerable coral beds are discussed in Section 7.3 (ETP).

Oceanography and primary productivity within the New Zealand EEZ has been well studied through research projects and remote sensing studies (see Figure 7). Fairly comprehensive benthic surveys have been performed of seabed types around the New Zealand continental shelf and seamounts. Analyses have developed a Marine Environmental Classification (MEC; Snelder et al., 2005) and sediment distributions in the New Zealand EEZ using categorical definitions, along with the Interim Nearshore Marine Classification (INMARC) developed by DOC (e.g. Leathwick et al., 2006). Further projects mapping the biodiversity of seabeds and the spatial and temporal extent of fishing are underway through NIWA. Projects are employing both acoustic mapping approaches and underwater camera work to map biodiversity and habitat types. The Ocean Survey 20/20 (OS 20/20) project aims to map the seafloor habitats and biodiversity of New Zealand's marine environment across large areas of the EEZ, but concentrating on the Chatham Rise and Challenger Plateau, and ongoing studies are expanding knowledge of the distribution of cold water corals. The location of key vulnerable habitat types (smokers, hydrothermal vents etc) is known. In turn, the footprint of the fishery is well established through VMS records, TCEPR data and other log book data.

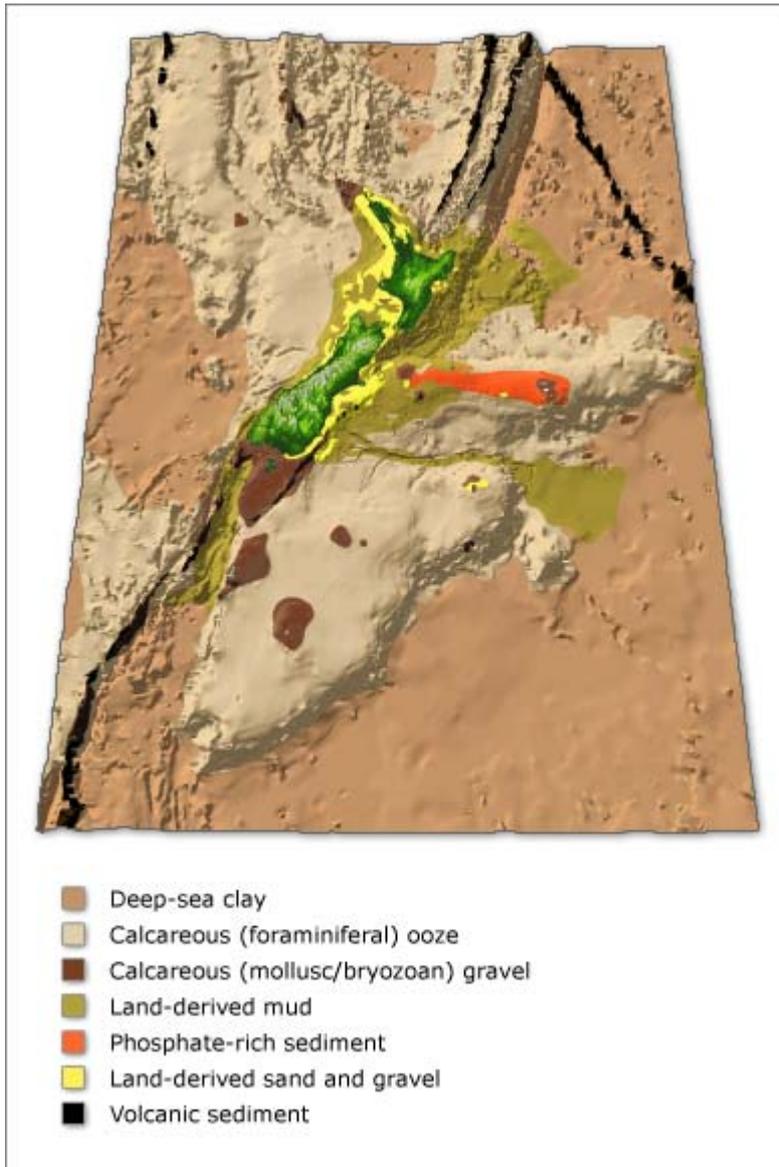


Figure 7: Distribution of sediments in the New Zealand region. Source: <http://www.teara.govt.nz/en/sea-floor-geology/6/2>

More recently, Ministry of Fisheries contracted research has developed a modelled spatial classification of benthic habitats within the New Zealand EEZ, based upon the best available biological data. This resulted in the Benthic Optimised Marine Environmental Classification (BOMECE; Leathwick et al., 2009). The approach used distributional data for eight taxonomic groups, along with a number of environmental variables to develop the classification for all EEZ areas at less than 3000m depth. This resulted in 15 different BOMECE habitat groups (Figure 8).

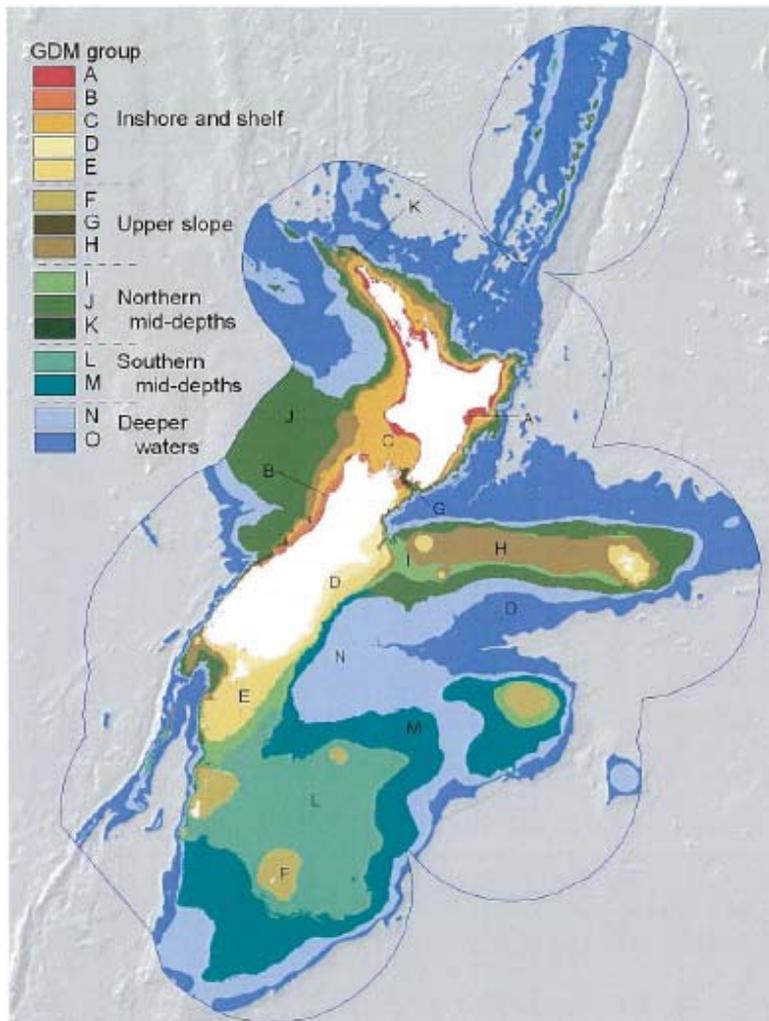


Figure 8: Geographic distribution of BOMEC habitat classes

Habitat impacts are discussed in Section 7.4.

7.2 Bycatch (retained and discarded species)

Data on catch rates and the relative abundance of non-target catch species in the fishery are available from three main sources:

- The trawl catch, effort and processing return forms (TCEPRs), which provide green-weight catch totals for the top five species (dependent on vessel size and fishing method) on a fishing-event basis, and a daily summary of TACC species caught.
- The Ministry of Fisheries observer data, which provides catch weight for all QMS and non-QMS species caught, on an observed tow-by-tow basis. This provides accurate and verifiable information, if on variable and patchy coverage. The observers monitored between 29% and 44% of trawls annually during the period 2002-2007.
- Fishery independent industry vessel-based and research vessel-based acoustic surveys and trawl surveys within the area provide (conservative) abundance estimates of key retained species.

Studies on observer catch composition data collected between 1 April 2002 and 31 March 2007 at the geographic scale of SBW6 (Anderson, 2008) indicated that 99% of the of the total estimated catch from all observed trawls was southern blue whiting, demonstrating the relatively clean nature of this fishery. About half of the remainder of the total catch comprised the three important commercial

species; ling (0.2%), hake (0.1%), and hoki (0.1%), and over 80% of the non-southern blue whiting catch was comprised of the QMS species (i.e. mainly ling, hake, hoki, porbeagle shark, jack mackerel, and Ray's bream).

The Top 10 species (retained and bycatch) within southern blue whiting-targeted trawl fisheries within SBW6 management areas, based upon observer data from 1 April 2004 and 31 March 2009 is displayed in Table 18.

Table 18: Top 10 retained and bycatch species within southern blue whiting-targeted trawl fisheries (Source: Observer data from 1 April 2004-31 March 2009). Proportion of QMS species in catch by weight noted. * indicates QMS species.

SBW6B	SBW6I	SBW6R
Southern blue whiting*	Southern blue whiting*	Southern blue whiting*
Ling*	Hake*	Pale ghost shark*
Opah	Ling*	Ling*
Porbeagle shark*	Large scaled brown slickhead	Spiny dogfish*
Pale ghost shark*	Javelinfish	Sponges
White warehou*	Opah	Hoki*
Moonfish*	Porbeagle shark*	White warehou*
Long-nosed chimaera	Rays bream*	Silverside
Baxter's lantern dogfish	Silverside	Moonfish*
Ghost shark*	Pale ghost shark*	Hake*
99.5%	99.9%	99.4%

Retained species are, by regulation, the Quota Management System (QMS) species, which are enumerated and retained on board. The major QMS species are the subject of analytical stock assessments and active management that is based upon formalised biologically based limits. For the remaining QMS species, the TACC system, which aims to limit the overall catch of species, combined with the 'deemed value' process, represents the management strategy for these species.

Of the retained bycatch species in the catch (~1% by weight), information is sufficient to quantitatively estimate outcome status with a high degree of certainty for the main QMS species caught, by target fishery and management area. However, information for some QMS species is more limited and quantitative estimates of outcome status are not routinely developed, although qualitative assessments could be and have been performed for particular species. Trends in the abundance of key retained species that are adequately sampled by trawl surveys in the sub-Antarctic are reported. In theory, action would be initiated if negative trends in particular species were identified, examples being the closure of fisheries on two orange roughy stocks, and the managed decreases in TACC for the Chatham Rise orange roughy stock. The potentially low statistical power of the survey data for some species is noted.

Species outside the QMS system tend to be considered at a low risk of unsustainability. For non-QMS species stock assessments are not performed, and assessments of the potential impact of the fishery on population levels are highly uncommon. These species are not managed under the TACC process.

Substantial catches of non-QMS species tend to lead to the establishment of their QMS status, as demonstrated by the increasing number of species within the QMS. This represents a strategy, described within the QMS introduction standard. If a bycatch species consistently reached 'main' levels (>5% of the catch), it would likely (but not always, dependent on assessed vulnerability) move

into the QMS system. A further route to QMS introduction is through the framework of continual monitoring of bycatch catches through the observer programme, the noting of species catches within vessel logbooks if they represent the top five species caught in a fishing event, and data from catch landing returns, where the weights of all species taken during the trip are reported. This provides a basis for simple assessments of the impact of the fishery on these species or species groups, although issues with recording small proportions of bycatch species within logbooks have been noted. Where the level of non-QMS catches is of concern, further research is undertaken, and consideration of the level of risk to the species (and the precautionary approach) are used as a basis for formalisation of that species within the QMS (see the requirements of the QMS Introduction Standard). A further strategy is the operational fishing approach for whiting, which results in a relatively 'clean' catch.

Given that formal assessments of non-QMS species are not performed, for the purposes of the current assessment, this has required a number of assumptions to be made. We have assumed that where assessments or qualitative evaluations are lacking, a species may be at risk where they represent >5% of the total catch, or are caught at levels greater than 10 tonnes per year where this species is considered of low productivity (identified through a PSA). We recognise that a species may have low abundance and high catchability, which may lead to incorrect estimation of status using these criteria. This approach is comparable to that taken under P1, in separating the determination of outcome from the management approach and information necessary to underpin that management. A level 1 risk assessment for non-QMS species is scheduled for completion in 2011-12.

The Ministry of Fisheries is currently implementing an increase to full observer coverage across all deepwater fisheries, which will improve information to support management measures for both retained, bycatch and ETP species.

7.3 Endangered, Threatened and Protected Species (ETP)

The Wildlife Act 1953 gives absolute protection to wildlife throughout New Zealand and its surrounding marine Territorial Sea and Exclusive Economic Zone. All marine mammals (including all seal, dolphin and whale species) are fully protected throughout New Zealand and its TS and EEZ under the Marine Mammals Protection Act 1978. The result of this is that almost all native birds and all marine mammals and marine reptiles (including visiting turtles and sea snakes) are fully protected in New Zealand (under one of two Acts), and out as far as the edge of the EEZ. The exceptions are a small number of native birds managed as game birds, and a few other native birds (notably sooty shearwater) that are only partially protected. Just one native bird, the black-backed gull, is currently unprotected. In 2010, a number of additional marine species were added to Schedule 7A of the act, including a number of corals (black, Gorgonia, Stony corals, as well as hydrocorals, aimed at simplifying coral interaction reporting requirements) and sharks and rays (including the basking shark, deepwater nurse shark, whale shark, manta ray; see <http://www.legislation.govt.nz/act/public/1953/0031/latest/DLM278598.html>)

The national requirements for ETP protection in New Zealand law notes that while incidental captures are not forbidden (i.e. required to be zero), the law requires captures to be reported to DOC, and the long-term aim is to minimise mortalities where possible. This provides good information on the potential effects of the fishery on ETP species. No specific limits on captures have been set, except for the New Zealand sea lion in the SQU6T squid trawl fishery; management activities aimed at minimising interactions are well underway.

For the southern blue whiting fisheries, interactions focus on seabirds, marine mammals, and cold water corals.

For seabirds, general mitigation approaches are being employed by trawlers and include mandatory use of seabird scaring devices as well as voluntary industry-led codes of practice, which are supported

through legislation and audited by government observers. Regulations require the use of one of three potential bird scaring devices: paired streamer lines, a bird baffler or a warp deflector, which must be deployed as soon as possible after trawl shooting by all trawlers 28m or greater in length. These devices have been shown through the observer programme data to have successfully reduced warp strikes. Vessel Management Plans are developed on a vessel-specific basis. These include methodologies to manage offal discharge during periods of vulnerability for seabirds, and are audited by MFish observers. This approach allows mitigation methods to be adapted to a particular vessel's operations, aiming to significantly reduce the risk of incidental interactions. While mincing of offal has been suggested prior to discharge, this approach is not effective in reducing activity of all seabird species around vessels. Cleaning of the net before shooting is also required. Warp cable bird strike mitigation has also been studied (e.g. Bull, 2007). Studies on trawl net interaction mitigation processes are underway (e.g. Clement and Associates Ltd, 2009), which noted that the benefits of net binding on shooting appeared minimal for pelagic trawls due to low bird incidence at that time of the operation, but that it may prove a beneficial mitigation for demersal (e.g. squid) trawls. Trials on vessel turns to close the net during retrieval indicated merits of this procedure as a mitigation measure and suggested this be used when high numbers of seabirds were actively feeding in the proximity of the trawl net. Further mitigation methods are being developed to reduce mortalities caused by trawl net capture. Reporting practices are also in place so that bird captures trigger action by DWG and are reported to MFish. The fact that the fisheries operate during the austral winter will further reduce bird interactions and the fisheries are assessed by the Level 1 Risk Assessment (Rowe 2009) as low to negligible risk with a high level of confidence. The Ministry of Fisheries completed a sea bird risk assessment process in 2011 which assessed the relative risk of fishery units to seabird species. This study indicated that for those albatross and petrel species likely to interact with this trawl fishery, the potential additional risk represented by the fishery under certification was less than 1%. The Ministry of Fisheries is currently finalising a new seabird policy to manage incidental interactions between seabirds and fisheries (see Table 19).

Table 19: Total level 2 risk assessment scores for the main seabird species, and the proportion of that risk associated with the SBW fishery as a whole.

Bird Species	Total Risk	SBW trawl
Black (Parkinson's) petrel	11.00	
*Black-browed albatross	5.59	
New Zealand king shag	2.04	
*Grey-headed albatross	3.46	0.02
Westland petrel	3.26	
Chatham albatross	2.70	0.00
Stewart Island shag	1.61	
Northern giant-petrel	2.55	0.01
Pitt Island shag	0.14	
Flesh-footed shearwater	2.42	
Chatham Island shag	0.20	
Salvin's albatross	2.29	
*Light-mantled albatross	2.14	0.01
Northern royal albatross	2.09	
Campbell albatross	1.81	0.01
New Zealand storm-petrel	0.00	
Yellow-eyed penguin	0.12	
Spotted shag	0.51	
Fiordland crested penguin	0.44	
Southern Buller's albatross	1.19	
Gibson's albatross	1.16	
Antipodean albatross	1.10	
Hutton's shearwaters	0.09	0.00
Pied shag	0.00	
South Georgia diving-petrel	0.00	

*Risk scores associated with these species are known to be biased or unreliable, see Draft Risk Assessment for more information.

There are no regulations defining mitigation approaches for marine mammal interactions (SLEDs are not required in this fishery), unlike those within the squid fishery. In the hoki fishery, a voluntary code of practice has been developed aimed at mitigating the incidental capture of pinnipeds during trawling (see Rowe, 2007). In turn, no fishery-related mortality limit has been developed for the

fishery. The New Zealand sea lion species management plan and recovery plan, mainly focused on the squid fishery, describes some protection, prohibiting fishing within 12nm of the Auckland Islands through the establishment of the marine mammal sanctuary. This area is legislated as a marine reserve. In turn, the industry has developed operating procedures to identify and react to marine mammal bycatch events. Rapid reporting practices are in place, so that marine mammal captures trigger action by DWG and are reported to MFish. In turn, operating procedures are also provided to minimise the danger period when the trawl net is close to the surface, shallow turns while trawling, and to avoid discharging offal (as in the VMP for bird bycatch mitigation). Some vessels avoid shooting nets where marine mammals are present (Rowe, 2009).

With respect to protected cold water corals, the pelagic trawls of the southern blue whiting fleet are unrestricted by the designation of Benthic Protection Areas. However even pelagic fishing activity in Benthic Protected Areas are subject to rigorous controls. The main mitigation strategy is an operational one – the generally pelagic nature of the trawl, although it is known that these trawls can interact with the seabed as noted by observers. These interactions are considered minimal when compared with demersal trawling.

Information is available on ETP species interactions through the on-going observer programme on board vessels. This information is analysed based upon the identified ‘target’ fishery. In turn, the addition of new species to the Fisheries Act in 2010 requires captures of specific sharks and corals in general to be reported specifically, using a standardised form that is administered by the Ministry of Fisheries. This provides a consistent reporting framework and effective data collection and collation.

Seabird and marine mammal interactions in the southern blue whiting fishery have been analysed in a number of studies (e.g. Abraham and Thompson, 2009), which provide detailed breakdowns of interactions and model the likely impact of the total fishing fleet based upon data from observed vessels. Population estimation studies are also underway for both birds and marine mammals, which will allow the likely impact of interactions on ETP species populations to be evaluated. In turn, ecological risk assessment studies for birds are underway (e.g. Waugh et al., 2008), which will allow evaluations to focus on potentially more at risk species. These data have been used within the current study to evaluate the potential impact of the fishery on ETP bird and marine mammal populations.

Key interactions appear to be with sea lions and fur seals, and a recent risk-based analysis placed seals and sealions within the higher end of the medium risk category with respect to trawl fisheries (noting that this included the squid trawl fishery and was across the NZ EEZ).

Given that fur seal numbers are widely considered to be increasing, the fishery interaction rate appears highly unlikely to affect the population. The view of likely low impact of the SBW fishery on the fur seal population specifically is supported by recent DWG analyses which calculated 'trigger limits' for interactions using the potential biological removal approach (Wade 1998). Using the available literature fur seal population estimates for 6B and 6I, this estimated trigger limits of 390-588 and 60 individual captures, respectively. Compared to the interaction rates estimated, and given that the SBW fishery is the only fishery to have significant interactions in the Bounty Islands region, there is a high degree of certainty that the effects of the fishery are within limits of national and international requirements. These calculations are currently being peer reviewed. These estimates rely on those historical values assumed for fur seal population size, although it is noted that fur seal numbers are thought to be increasing and hence these values are likely precautionary, and there is a high degree of certainty that the effects of the fishery are within limits of national and international requirements.

The inter-relationship between sea lion breeding populations from the Auckland Islands and Campbell Islands at sea is unclear and further study may require action to be taken, given that sea lions may travel up to 175km from the coast to feed, and hence interactions with fisheries in 6I might occur. Campbell Island (6I) is estimated to contain ~20% of the total breeding population in New Zealand.

An estimated 583 pups were born in 2008. Records indicate that pup production may have increased over time, although direct comparisons are made difficult by variations in the pup production survey methodologies (Maloney et al. 2009). DOC completed a new survey of pup numbers in Campbell Island in 2010, and the results are currently being processed.

For sea lions, records indicate that interactions only occur with the southern blue whiting fishery in sub-area 6I, with on average 5 captures per annum. All other areas (6B and 6R) show zero interactions and hence there is a high degree of certainty that the effects of the fishery in these areas are within limits of national and international requirements. Sub-area 6I is estimated to contain around 20% of the breeding population in New Zealand. A lack of recent local population estimates hampers numerical evaluation of potential impacts and hence it is highly likely (rather than there being a high degree of certainty) that the fishery in 6I is within limits of national and international requirements, aided by the fact that all observed interactions in this SBW fishery in the last decade have been identified at sea as male animals.

Studies are ongoing to identify the distribution and potential interaction rates of the fishery with protected cold water coral species. Two groups of corals are currently listed on Schedule 7A of the Wildlife Act: black coral (“all species in the Order Antipatharia”) and “red coral.” These species have previously been recognised as being vulnerable to pressure from collecting. The ‘red coral’ is noted to include all species in the genus *Errina* (which lies within the family *Stylasteridae*) but is also the common name of a number of coral species in the order *Gorgonacea*. Cold water corals captured in trawls are noted by observers present onboard, and where they cannot be identified they are returned to NIWA for more detailed examination under DoC funded projects. Fishery-independent surveys are also underway using cameras inside and outside the main fishery areas. See Figure and Figure for distributions.

Recent analyses of observer records suggested near zero interactions with main coral groups (Tracey et al., 2011; tables 3 and 3.1; 2 tows out of 320 observed with coral catch, 3kg of bubblegum coral 'caught') which supports these observations. While the observer records do not provide complete coverage of the fishery, the infrequent encounters of ETP species in the available data, combined with the fishery footprint and semi-pelagic fishing method, suggest that it is highly unlikely that trawls fishing for southern blue whiting will create unacceptable impacts.

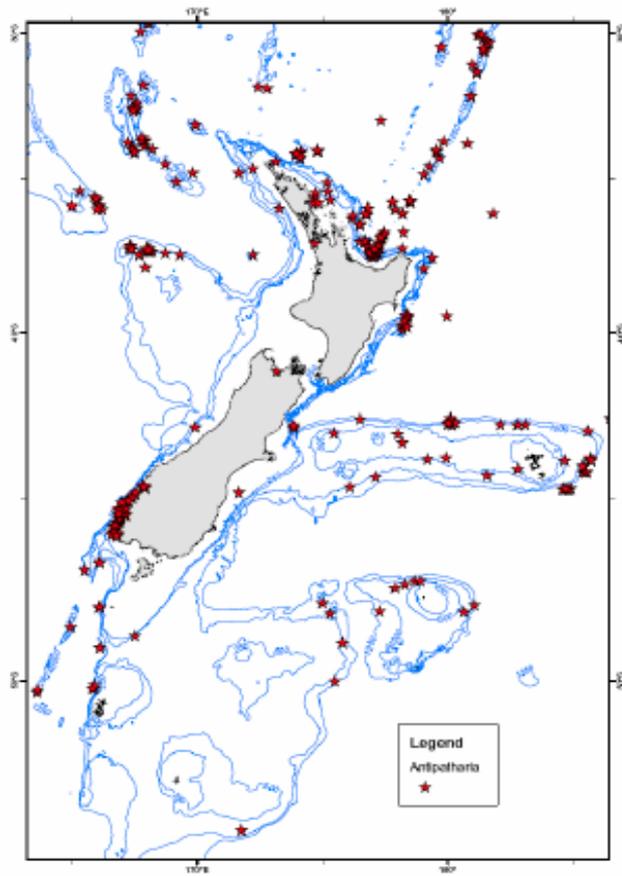


Figure 9: Identified colonies of Black Corals from records within New Zealand waters. Source: NIWA Client Report: WLG2006-85.

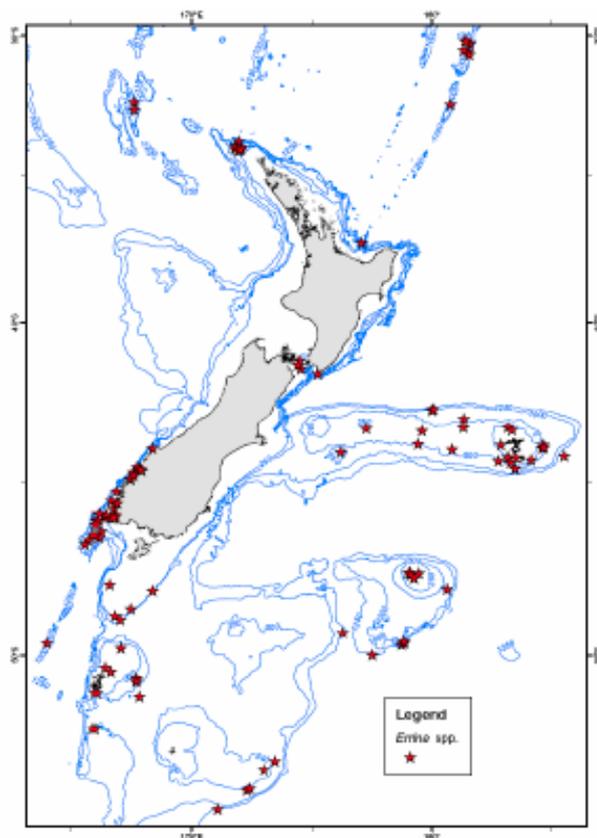


Figure 10: Identified colonies of *Errina* from records within New Zealand waters. Source: NIWA Client Report: WLG2006-85).

7.4 Ecosystem impacts

While the impacts of semi-pelagic trawling will be much reduced compared to those of demersal trawls, those impacts that do occur will potentially include removals of mobile and sessile species, and the disturbance and modification of the structure of the seafloor. In the sub-Antarctic regions, the majority of trawling is within higher-energy sediments such as sandy silt and clay, although some lower-energy areas exist in these regions. Recovery from impacts in these environments is expected to be quicker than in lower energy habitats.

Data from surveys, logbooks and the observer programme are available to allow the location of impacts by the fishery on habitat types to be identified. The VMS provides reliable information on the spatial extent, timing and location of use of the fishing gear.

The impact of trawling for conservation and species diversity/persistence can be limited if trawling affects small proportions of a habitat type within an area, a situation increasingly likely for semi-pelagic trawl gear. Trawling of small proportions of each habitat type may therefore be acceptable, and impact on benthic ecosystems reduced, in this situation as the biodiversity is maintained in neighbouring areas.

While the New Zealand Government closed 17 BPAs (Benthic Protection Areas) within the New Zealand EEZ (Exclusive Economic Zone) to bottom trawl fishing methods in perpetuity as of late 2007, these do not exclude the semi-pelagic gears used within the southern blue whiting fishery. Development of Marine Protected Areas within the Territorial Sea (from the coast to the 12-mile limit) will only limit these operations around the islands in the sub-Antarctic region. Trawling activity

is already excluded in some areas to protect sea lion colonies. Pelagic trawling is permissible within BPAs only under specific circumstances and under strictly regulated conditions.

The observer programme notes benthic invertebrates brought up in the trawl fishery, although the taxonomic resolution of these groups is less detailed. Taxonomic guides developed by NIWA for cold water corals and sponges is improving species recognition, while still unidentified corals are returned for professional taxonomic identification (see section 7.3).

Further studies by both DWG and MFish have examined the footprint of the fishery in relation to specific habitats within the New Zealand EEZ and developments of relevance to Vulnerable Marine Ecosystems. Estimates of the total demersal trawl footprint – of which this fishery forms a part – are around 8% of the total EEZ area. Those calculations for the southern blue whiting fishery appear to take a worst-case scenario where the total trawl event has taken place in contact with the sea bed (see Figure 11). Specifically for the southern blue whiting management areas considered here, footprint estimates are:

SBW6B: 0.7%
 SBW6I: 4.8%
 SBW6R: 2.6%

Using the BOMECE framework, the footprint of trawl gears in the SBW fishery, and the interaction between the gear and BOMECE habitat classes were evaluated (Baird and Wood, 2009; Black and Wood, 2010). This approach used trawl start-and-end information and mapped the assumed swept area of the trawl against the EEZ area and BOMECE classes. The results indicate that the SBW fishery trawled a total of 0.43% of the New Zealand EEZ and territorial sea between 1989-90 and 2008-09, and 4.25% of the full habitat range of SBW (see also Figure 12), as calculated by the NABIS-defined 'SBW range' (see <http://www.nabis.govt.nz/Pages/WhatNabisCanDo.aspx>). This, combined with the method of fishing, provides evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm

As part of the 10-year Research Programme, the trawl grounds of the SBW fisheries will now be mapped and audited annually. This will allow the extent of trawl interactions with benthos to be monitored, related to BOMECE classes, and provide a mechanism to identify if and where further management measures become necessary (Ministry of Fisheries, 2011). Further calculations of the potential swept area by BOMECE habitat classes will be monitored during the annual audit process.

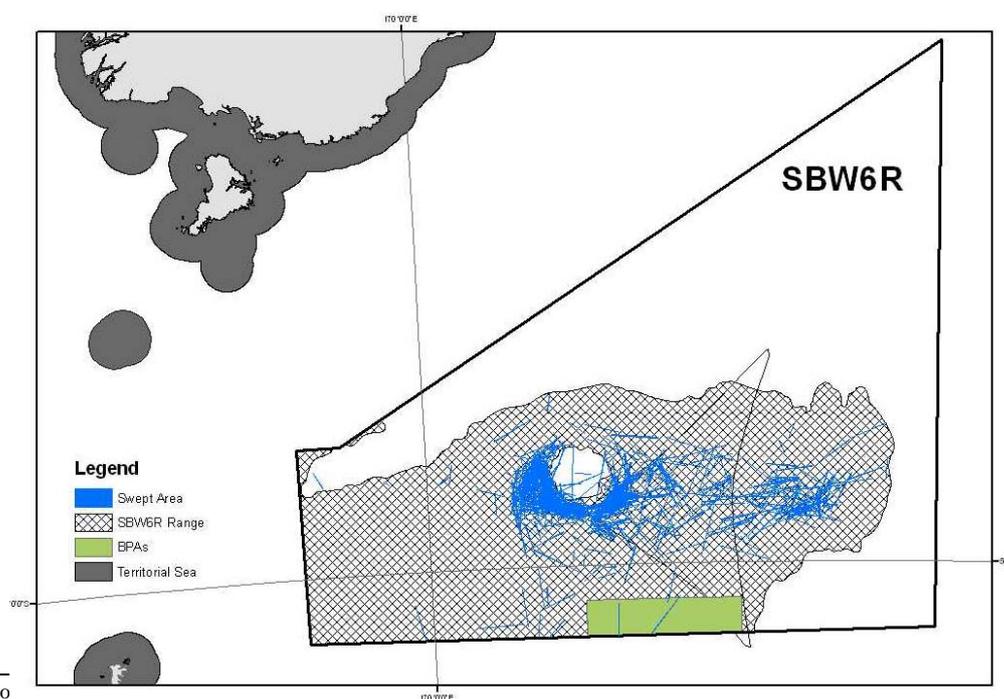


Figure 11: Example of areas swept by demersal southern blue whiting trawls in management area SBW6R (Source: Deepwater Group)

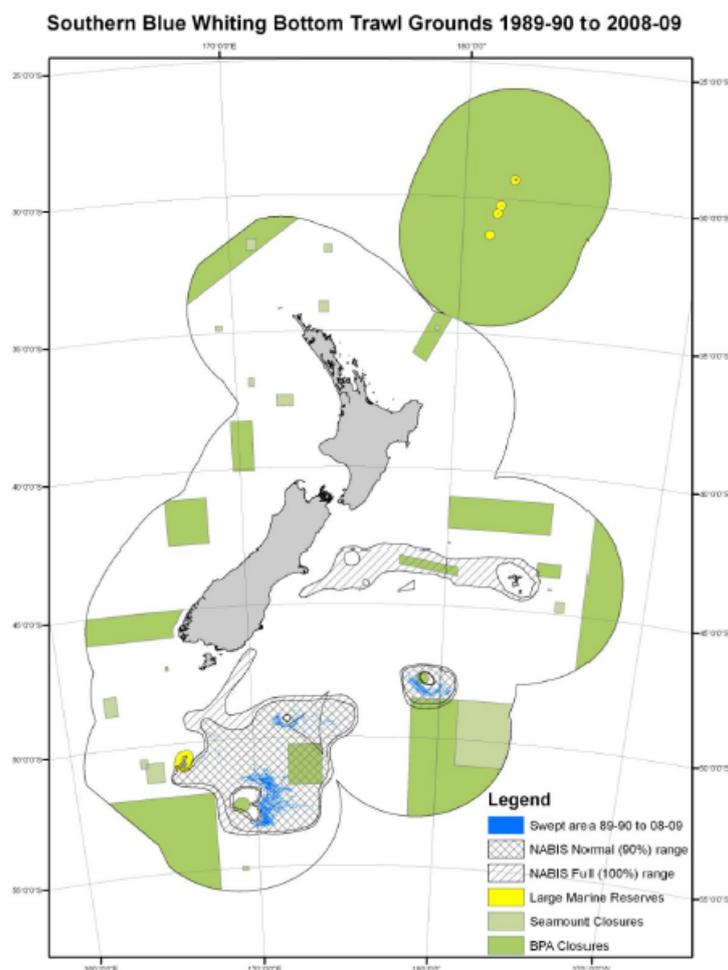


Figure 12. Southern blue whiting trawl grounds within the New Zealand EEZ, BPA closed areas, and the overall trawl swept area tracks over the period 1989/90 to 2008/09.

The ecosystem structure around New Zealand has been examined through the collection and analysis of stomach contents in key fish species (juveniles and adults) in the sub-Antarctic region of the New Zealand EEZ (e.g. Livingston and Stevens, 2004). While the relationships with their predators are reasonably understood, the study of this component has been lower. The structure of the mid-water food web is broadly understood for the sub-Antarctic area through numerous studies, which underpin existing ecosystem models (Bradford-Grieve et al., 2003). Given the different ecosystems covered by existing models and studies, information is adequate to broadly understand the functions of the key elements of the ecosystem. Information from the observer programme, and the logbooks (for the main 5 species in the catch) as well as continued sampling of stomachs, allow the main consequences for the ecosystem to be inferred.

The developed Ecopath models allow the impacts of the fishery on components to be examined, although this analysis has not yet been performed. However, the clean nature of the fishery, and the fact that southern blue whiting is being removed at levels close to B_{MSY} , means there would be a sizeable proportion of biomass remaining in the ecosystem, and removals at this level are unlikely to

comprise adverse effects.

More recently, studies have been performed to examine New Zealand's deepwater fisheries using an energetics approach. The results of this study are currently under peer review. The approach estimates the fraction of net primary production required to support the deepwater fisheries harvest. Dependent upon the indicator framework used, the deepwater fisheries as a whole (rather than SBW alone) would be rated as >70% or >50% to be sustainably fished. The authors of the report note that while deepwater fisheries appear sustainable, appropriating 4-5% of the carbon produced annually in recent years, this reflects somewhat the 'fishing down the foodweb' that will occur due to the removal of top predator fish species, and that deepwater fisheries contribute to the cumulative energetic pressures on the wider ecosystem from all fisheries, which require an estimated 12% of the carbon produced annually. This research does not identify a breakdown for the SBW fishery specifically, while identification of the potential disruption in the key elements underlying ecosystem structure and function from the SBW fishery would require a food web analysis, as noted by the authors. However, this analysis does strongly support the opinion that the fishery is highly unlikely to disrupt the ecosystem structure and function.

8 OTHER FISHERIES AFFECTING TARGET STOCK

This has been discussed in section 4.3. In addition, southern blue whiting may also be taken as a bycatch species in the New Zealand MSC Certified Hoki fishery. The hoki fishery was originally certified in March 2001 and then recertified in October 2007. Other fisheries within the New Zealand EEZ which may interact with southern blue whiting fisheries include the hake and ling fisheries. These species are also taken as a bycatch in the hoki fishery and the New Zealand EEZ hake trawl fishery and New Zealand EEZ ling trawl and longline fisheries are currently under assessment for MSC certification.

9 STANDARD USED

The MSC Principles and Criteria for Sustainable Fisheries form the standard against which the fishery is assessed and are organised in terms of three principles. Principle 1 addresses the need to maintain the target stock at a sustainable level; Principle 2 addresses the need to maintain the ecosystem in which the target stock exists, and Principle 3 addresses the need for an effective fishery management system to fulfil Principles 1 and 2 and ensure compliance with national and international regulations. The Principles and their supporting Criteria are presented below.

Principle 1

A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.¹

The intent of this principle is to ensure that the productive capacities of resources are maintained at high levels and are not sacrificed in favour of short-term interests. Thus, exploited populations would be maintained at high levels of abundance designed to retain their productivity, provide margins of safety for error and uncertainty, and restore and retain their capacities for yields over the long term.

Criteria:

1. The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.
2. Where the exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level consistent with the precautionary approach and the ability of the populations to produce long-term potential yields within a specified time frame.
3. Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.

Principle 2

Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.

The intent of this principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem.

Criteria:

1. The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.
2. The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimises mortality of, or injuries to endangered, threatened or protected species.
3. Where exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames, consistent with the

¹ The sequence in which the Principles and Criteria appear does not represent a ranking of their significance, but is rather intended to provide a logical guide to certifiers when assessing a fishery. The criteria by which the MSC Principles will be implemented will be reviewed and revised as appropriate in light of relevant new information, technologies and additional consultations

precautionary approach and considering the ability of the population to produce long-term potential yields.

Principle 3

The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

The intent of this principle is to ensure that there is an institutional and operational framework for implementing Principles 1 and 2, appropriate to the size and scale of the fishery.

A. Management System Criteria:

1. The fishery shall not be conducted under a controversial unilateral exemption to an international agreement.

The management system shall:

2. Demonstrate clear long-term objectives consistent with MSC Principles and Criteria and contain a consultative process that is transparent and involves all interested and affected parties so as to consider all relevant information, including local knowledge. The impact of fishery management decisions on all those who depend on the fishery for their livelihoods, including, but not confined to subsistence, artisanal, and fishing-dependent communities shall be addressed as part of this process.
3. Be appropriate to the cultural context, scale and intensity of the fishery – reflecting specific objectives, incorporating operational criteria, containing procedures for implementation and a process for monitoring and evaluating performance and acting on findings.
4. Observe the legal and customary rights and long-term interests of people dependent on fishing for food and livelihood, in a manner consistent with ecological sustainability.
5. Incorporates an appropriate mechanism for the resolution of disputes arising within the system².
6. Provide economic and social incentives that contribute to sustainable fishing and shall not operate with subsidies that contribute to unsustainable fishing.
7. Act in a timely and adaptive fashion on the basis of the best available information using a precautionary approach particularly when dealing with scientific uncertainty.
8. Incorporate a research plan – appropriate to the scale and intensity of the fishery – that addresses the information needs of management and provides for the dissemination of research results to all interested parties in a timely fashion.
9. Require that assessments of the biological status of the resource and impacts of the fishery have been and are periodically conducted.
10. Specify measures and strategies that demonstrably control the degree of exploitation of the resource, including, but not limited to:

² Outstanding disputes of substantial magnitude involving a significant number of interests will normally disqualify a fishery from certification.

- a) Setting catch levels that will maintain the target population and ecological community's high productivity relative to its potential productivity, and account for the non-target species (or size, age, sex) captured and landed in association with, or as a consequence of, fishing for target species;
 - b) Identifying appropriate fishing methods that minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;
 - c) Providing for the recovery and rebuilding of depleted fish populations to specified levels within specified time frames;
 - d) Mechanisms in place to limit or close fisheries when designated catch limits are reached;
 - e) Establishing no-take zones where appropriate.
11. Contain appropriate procedures for effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specifies corrective actions to be taken in the event that they are.

B. Operational Criteria

Fishing operation shall:

12. Make use of fishing gear and practices designed to avoid the capture of non-target species (and non-target size, age, and/or sex of the target species); minimise mortality of this catch where it cannot be avoided, and reduce discards that cannot be released alive.
13. Implement appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas.
14. Not use destructive fishing practices such as fishing with poisons or explosives;
15. Minimise operational waste such as lost fishing gear, oil spills, on-board spoilage of catch etc.
16. Be conducted in compliance with the fishery management system and all legal and administrative requirements.
17. Assist and co-operate with management authorities in the collection of catch, discard, and other information of importance to effective management of the resources and the fishery.

10 BACKGROUND TO THE EVALUATION

10.1 Evaluation Team

Lead Assessor: Andrew Hough: Interek Moody Marine Limited. Dr Hough has a PhD in marine ecology from the University of Wales, Bangor and fourteen years post-doctoral experience in commercial marine and coastal environmental management projects. He is manager of Interek Moody Marine operations within Moody International Certification with particular responsibility for the implementation of MSC Certification procedures and development of MSC methodologies. Dr. Hough has acted as lead assessor on the majority of Interek Moody Marine MSC pre assessments and main assessments.

Project Coordinator: Seran Davies: Interek Moody Marine Limited. Seran is a qualified marine biologist with nine years direct experience of marine environmental management and assessment, including fishery evaluations and EIA of developments in marine and freshwater environments.

Expert advisor: Paul Medley. Paul is an independent fisheries consultant, based in the UK. His expertise includes mathematical modelling of fisheries and ecological systems, techniques for multispecies stock assessment and external review of stock assessment methodologies. He has been an invited expert for a number of stock assessment working group meetings. He has a wide practical experience in marine biology, including design and implementation of surveys and fisheries experiments. This includes addressing wider environmental issues of ecological management, including maintenance of marine biodiversity. He has also taken part in the MSC assessment of the South Georgia Patagonian Toothfish fishery and has worked with MSC on new methodology developments.

Expert advisor: Graham Pilling. Graham is a Fisheries Biologist & Advisor and Head of the Seas and Oceans Group with the Centre for Environment, Fisheries and Aquaculture Science (Cefas), UK. His experience includes working in tropical, temperate and polar marine and freshwater ecosystems, gaining in depth experience in the practical assessment and management of pelagic and demersal fisheries through a wide range of methodologies. He has chaired FAO GFCM and EU STECF SGMED stock assessment meetings on demersal species in the Mediterranean, and has been an expert reviewer for a number of US stock assessments. He has developed and implemented models to simulate the long-term impacts of uncertainty in stock biology and assessments on fisheries management, and methods to assess and manage data poor fisheries. He has also taken part in the MSC assessment of a wide range of fisheries, concentrating on Principle 2 (environment and ecosystem) issues.

Expert advisor: Jo Akroyd. Jo is Director and Principal Consultant of Jo Akroyd Ltd, an International consultancy company specialising in marine fisheries policy and marine ecosystem and community based management. She has also provided services in quality system implementation and training in project management and negotiation skills. Prior to a career in consultancy, she was manager of International Projects at the Auckland University of Technology and Director of Quality and Strategic Management and Assistant Director of Marine Research at the Ministry of Agriculture & Fisheries, Wellington, NZ. Her specific experience includes acting as a team member on the assessment of the NZ hoki fishery, providing specialist inputs on Principle 3 (Fisheries management), the Ross Sea Toothfish fishery assessment and the Tosakatsuo Suisan Skipjack tuna assessment.

10.2 Previous certification evaluations

The fishery has not been previously assessed against the MSC standard.

10.3 Inspections of the Fishery

Inspection of the fishery focused on the practicalities of fishing operations, the mechanisms and effectiveness of management agencies and the scientific assessment of the fisheries.

Meetings were held as follows (some of the key issues discussed have been identified for each meeting):

Name	Affiliation	Date	Key Issues
George Clement Aoife Martin Richard Wells	DWG MFish DWG	13/07/09	Fishing operations and management
Nathan Walker (Senior Scientist) Johanna Pierre (Manager- Marine Conservation Services) Stephanie Rowe (Scientific Officer)	MFish DOC DOC	16/07/09	Ecosystem Interactions
Peter Horn (Hake and Ling Stock Assessor) David Middleton (Chief Scientist) Rosemary Hurst (Scientist) Pamela Mace (Chief Scientist)	NIWA NZ Seafood Industry Council NIWA MFish	14/07/09	Stock assessments
Pamela Mace (Chief Scientist) Martin Cryer (Science Manager) Mary Livingston (Principle scientist) Ed Abraham (Consultant) Cathryn Bridge (Senior Policy Manager) Nathan Walker (Senior Scientist) Stephanie Rowe (Scientific Officer)	MFish MFish MFish Dragonfly MFish MFish DOC	15/07/09	Ecosystem interactions and management effectiveness
Alan Martin (Operation Manager- Observer Services)	MFish	16/07/09	Observer program and data
Diane Tracey (Scientist Deep Sea Fisheries)	NIWA	16/07/09	Ecosystem interactions
David Foster (Fisheries Analyst) Aoife Martin (Manager Deep Water Fisheries) Tom Chatterton (Manager Deep Water Fisheries) Vicky Reeve (Fisheries Analyst) Jeremy Helson (Senior Fisheries Analyst) Andy Hill (Deep Water Fisheries)	MFish	16/07/09	Management effectiveness
Geoff Clarke (District Compliance Manager) Andrew Coleman (Compliance) Dean Baigent (Surveillance)	MFish MFish MFish	14/07/09	Compliance and Enforcement
Kevin Hackwell Kirstie Knowles	Royal Forest & Bird	23/07/09	Ecosystem interactions and management effectiveness
Catherine Wallace (Co-Chairman) Barry Weeber (Co-Chairman) Karli Thomas (Oceans Campaigner) Geoff Key (Political Advisor)	ECO ECO Greenpeace Greenpeace	23/07/09	Ecosystem interactions and management effectiveness
Peter Trott (Fisheries Program Manager) Rebecca Bird (Marine Programme Manager)	WWF Australia WWF New Zealand	24/07/09	Ecosystem interactions and management effectiveness

11 STAKEHOLDER CONSULTATION

11.1 Stakeholder Consultation

A total of 19 stakeholders were identified and consulted specifically by Intertek Moody Marine. Information was also made publicly available at the following stages of the assessment:

Date	Purpose	Media
19/05/09	Announcement of assessment	Direct E-mail/letter Notification on MSC website Advertisement in press
02/06/09	Notification of Assessment Team nominees	Direct E-mail Notification on MSC website
17/06/09	Notification of intent to use MSC FAM Standard Assessment Tree	Direct E-mail Notification on MSC website
23/06/09	Notification of assessment visit and call for meeting requests	Direct E-mail Notification on MSC website
21-24/07/09	Assessment visit	Meetings
01/09/11	Notification of Proposed Peer Reviewers	Direct E-mail Notification on MSC website
19/01/12	Notification of Public Draft Report	Direct E-mail Notification on MSC website
TBC	Notification of Final Report	Direct E-mail Notification on MSC website

12 OBSERVATIONS AND SCORING

The MSC Principles and Criteria set out the requirements of a certified fishery. These Principles and Criteria have been developed into a standard (Fishery Assessment Methodology) assessment tree - Performance Indicators and Scoring Guideposts - by the MSC, which is used in this assessment.

The Performance Indicators (PIs) have been released on the MSC website. In order to make the assessment process as clear and transparent as possible, each PI has three associated Scoring Guideposts (SGs) which identify the level of performance necessary to achieve 100, 80 (a pass score), and 60 scores for each Performance Indicator; 100 represents a theoretically ideal level of performance and 60 a measurable shortfall.

For each Performance Indicator, the performance of the fishery is assessed as a 'score'. In order for the fishery to achieve certification, an overall weighted average score of 80 is necessary for each of the three Principles and no Indicator should score less than 60. As it is not considered possible to allocate precise scores, a scoring interval of five is used in evaluations. As this represents a relatively crude level of scoring, average scores for each Principle are rounded to the nearest whole number.

Scores for the Fishery are presented in the scoring table (Appendix A).

13 LIMIT OF IDENTIFICATION OF LANDINGS FROM THE FISHERY

Traceability of product from the sea to the consumer is vital to ensure that the MSC standard is maintained. There are several aspects to traceability that the MSC require to be evaluated: Traceability within the fishery; at-sea processing; at the point of landing; and subsequently the eligibility of product to enter the chain of custody. These requirements are assessed here.

13.1 Traceability within the fishery

The traceability within the fishery is deemed as being very good with all catches having documentation supplied upon landing which contains information on catch area, species, amount of catch and vessel. This documentation is passed along with the fish to the point of sale.

If a vessel were fishing outside the Unit of certification there are systems in place. All factory trawlers in NZ are operating under NZ Food Safety Authority (NZFSA) and NZ Fisheries Act rules and regulations. As such they are required to both land all catch of QMS species (such as southern blue whiting) and ensure that any fish that will not be fit for human consumption, e.g. through damage or accidental contamination, is not able to be inadvertently sold into market. This drives the need for all vessels to be able to mark, 'ring-fence' and inventory product or products on a reasonably regular basis. This is coupled with the fact that all vessels produce a wide range of species and products, all of which are needed to be marked by date and numerous other information, and able to be sorted on arrival in port and inventoried for market and export purposes. Both physical and electronic inventory management is inherent in the systems that these vessels operate.

13.2 At-sea processing

At-sea processing occurs on all the major factory ships participating in this fishery. At-sea processing includes the sorting, heading and gutting, filleting, freezing, reduction to surimi and packaging of southern blue whiting.

There are two levels of process technology in the fleet

1. Fully integrated weighing labelling systems which barcode every carton on production and before storage in the ship's hold. This data is downloaded on arrival, reconciled on landing figures and thus final inventory is arrived at. This system allows the tagging of product lines e.g. SBW 1 and 6A bycatch which is non-certified so that it is barcoded as non-certified and trackable and separable ever after simply by scanning. Onshore systems in load-out audit exports.
2. The rest of the fleet practice standard practice where all product (by carton) is labelled as per MAF and NZFSA requirements. The outer markings are used to separate and inventory all product on landing. Hence to ensure SBW non-certified product is separated, all that is required is a directive to the vessel to undertake on standard basis.

13.3 Risk of Substitution

The risk of substitution is considered to be well managed and therefore negligible. There is a large geographic distance between the areas of certified and noncertified fish. Under MFish regulations every container in which fish is packaged on a licenced fish receiver's premise shall be marked with species name, date, licenced fish receivers name, processed state, area fished. As evidence currently EU certified and non EU certified product is produced in the fishery. This is kept separate on board and at discharge and in the coolstore using the cool store's electronic system of bar codes identifying each pallet. Thus the products cannot be mixed at load out time.

13.4 Points of landing

The main points of landing for this fishery are all major New Zealand ports.

13.5 Eligibility to enter chains of custody

The scope of this certification ends at the points of landing which are described above. Downstream certification of the product would require appropriate certification of storage and handling facilities at these locations.

IMM determined that the systems in place for tracking and tracing are sufficient, fish and fish products from the fishery may enter into further certified chains of custody and be eligible to carry the MSC ecolabel.

13.6 Target Eligibility date

The target eligibility date is October 2011. This is the date from which products are likely to be eligible to bear the MSC ecolabel.

This date is selected as it is less than six months from the publication of the Public Comment draft Report. It is also the beginning of the NZ fishery management year.

The risks to the traceability system in this fishery have been assessed and are adequately addressed. All product at sea and landed is identified with barcodes and labels that identify species, date, area caught and quantity. If a product is caught in an uncertified zone it would be ‘red stickered’ – it would be identified throughout process and storage. The product would be isolated in cold storage and clearly marked on each pallet.

The NZ Record Keeping Regulations are strict and enforced.

14 ASSESSMENT RESULTS

The Performance of the New Zealand EEZ Southern Blue Whiting Fisheries in relation to MSC Principles 1, 2 and 3 is summarised below:

Species:	Southern Blue Whiting, <i>Micromesistius australis</i>
Geographical Area:	Bounty area (NZ EEZ) (6B)
Method of Capture:	Pelagic Trawl
Management System:	Ministry of Fisheries
Client Group:	Deepwater Group Ltd

MSC Principle	Fishery Performance
Principle 1: Sustainability of Exploited Stock	Overall : 83.13 PASS
Principle 2: Maintenance of Ecosystem	Overall : 88.67 PASS
Principle 3: Effective Management System	Overall : 93.75 PASS

This fishery attained a score of 80 or more against each of the MSC Principles and did not score less than 60 against any Indicators. It is therefore recommended that the New Zealand EEZ Southern Blue Whiting Pelagic Trawl Fishery in the Bounty area (6B) be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.

Species:	Southern Blue Whiting, <i>Micromesistius australis</i>
Geographical Area:	Campbell area (NZ EEZ) (6I)

Method of Capture: Pelagic Trawl
Management System: Ministry of Fisheries
Client Group: Deepwater Group Ltd

MSC Principle	Fishery Performance
Principle 1: Sustainability of Exploited Stock	Overall : 85.63 PASS
Principle 2: Maintenance of Ecosystem	Overall : 87.67 PASS
Principle 3: Effective Management System	Overall : 93.75 PASS

This fishery attained a score of 80 or more against each of the MSC Principles and did not score less than 60 against any Indicators. It is therefore recommended that the New Zealand EEZ Southern Blue Whiting Pelagic Trawl Fishery in the Campbell area (6 I) be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.

Species: Southern Blue Whiting, *Micromesistius australis*
Geographical Area: Pukaki area (NZ EEZ) (6R)
Method of Capture: Pelagic Trawl
Management System: Ministry of Fisheries
Client Group: Deepwater Group Ltd nominated vessels/companies

MSC Principle	Fishery Performance
Principle 1: Sustainability of Exploited Stock	Overall : 81.88 PASS
Principle 2: Maintenance of Ecosystem	Overall : 88.67 PASS
Principle 3: Effective Management System	Overall : 93.75 PASS

This fishery attained a score of 80 or more against each of the MSC Principles and did not score less than 60 against any Indicators. It is therefore recommended that the New Zealand EEZ Southern Blue Whiting Pelagic Trawl Fishery in the Pukaki area (6R) be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.

14.1 Conditions

As a standard requirement of the MSC certification methodology, the fisheries shall be subject to (as a minimum) annual surveillance audits. These audits shall be publicised and reports made publicly available.

The fisheries attained a score of below 80 against one Performance Indicator. The assessment team

has therefore set a condition for certification that the client is required to address. The condition is applied to improve performance to at least the 80 level within a period set by the certification body but no longer than the term of the certification.

As a standard condition of certification, the client shall develop an 'Action Plan' for Meeting the Condition for Continued Certification', to be approved by Intertek Moody Marine.

The condition is associated with one key area of performance of the fisheries. The Condition, associated timescales and relevant Scoring Indicator are set out below.

Condition 1:

2.3.2 (6I only)	Endangered, Threatened and Protected (ETP) species
PI	<p>Management strategy</p> <p>The fishery has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> - meet national and international requirements; - ensure the fishery does not pose a risk of serious or irreversible harm to ETP species; - ensure the fishery does not hinder recovery of ETP species; and - minimise mortality of ETP species.
SG 60	<p>There are <u>measures</u> in place that minimise mortality, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.</p> <p>The measures are <u>considered likely</u> to work, based on <u>plausible argument</u> (eg general experience, theory or comparison with similar fisheries/species).</p>
SG 80	<p>There is a <u>strategy</u> in place for managing the fishery's impact on ETP species, including measures to minimise mortality, that is designed to be highly likely to achieve national and international requirements for the protection of ETP species.</p> <p>There is an <u>objective basis for confidence</u> that the strategy will work, based on <u>some information</u> directly about the fishery and/or the species involved.</p> <p>There is <u>evidence</u> that the strategy is being implemented successfully.</p>
SG 100	<p>There is a <u>comprehensive strategy</u> in place for managing the fishery's impact on ETP species, including measures to minimise mortality, that is designed to achieve <u>above</u> national and international requirements for the protection of ETP species.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and a <u>quantitative analysis</u> supports <u>high confidence</u> that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is evidence that the strategy is achieving its objective.</p>
Scoring	75 (6I only)
Rationale	<p>Based on the analytical information available, while operational strategies appear effective at reducing seabird, fur seal and coral interactions, they appear less effective for sea lions. While the fishery impact appears highly unlikely to create unacceptable impacts on sea lion populations (2.2.1), there is no formal mitigation strategy to ensure this remains so, and analytical evidence to provide an objective basis for confidence that the operational strategies in place will work is limited.</p>
Condition	<p>Within three years of certification: i) Identify the level of ETP species interactions that would lead to adverse effects on population levels for sea lions, and ii) where a problem is identified, develop and implement appropriate management approaches to achieve those national requirements and objectives.</p> <p>Milestone 1: By the first annual surveillance, identify the level of ETP species interactions that would lead to adverse effects on population levels for sea lions,</p>

	<p>Milestone 2: By the second annual surveillance, where a problem is identified, develop and implement appropriate management approaches to achieve those national requirements and objectives.</p> <p>Within three years of certification</p> <p>Milestone 3: Provide evidence that the strategy is being implemented successfully</p>
Client Action Plan	<p>The client fishery, in conjunction with the Ministry of Fisheries, will continue to conduct ongoing monitoring of both levels of New Zealand sea lion interactions and adherence to the agreed mitigation measures. Monitoring will be driven through Operational Objective 2.2 in the Southern Blue Whiting National Fisheries Plan chapter and will be undertaken through the Ministry's Observer Programme. Observers will achieve not less than 20% coverage onboard client fishery vessels in the SBW 61 fishery each year, with coverage being progressively scaled up over the period of certification. Additional analyses of the nature and extent of interactions will further enable trends in incidental interactions and mortality data for the species to be assessed.</p> <p>At present, the monitoring, mitigation and assessment measures in place are considered to be demonstrably effective, such that the southern blue whiting fishery does not adversely affect the New Zealand sea lion sub-population at the Campbell Islands. However, to ensure current interactions are within biologically based limits for sea lions, the client fishery will undertake an updated PBR analysis of the Campbell Islands' sea lion population by 2013. Population research already, or being, undertaken by Department of Conservation will help to inform these analyses. This process is achievable because good data are available on the levels of fishery interactions (relatively little fishing effort coupled with high levels of observer coverage) and on the recent <i>Phocarctos hookeri</i> population size at the Campbell Islands (from Department of Conservation research).</p> <p>Should the PBR analysis demonstrate that further mitigation measures are required, DWG will, in conjunction with the Ministry, develop, implement and monitor these.</p>
Consultation on condition	The Ministry of Fisheries government officials are committed to assisting the fishery in meeting this condition.

14.2 Recommendations

No recommendations were made by the Assessment team associated with the SBW fisheries certification.

APPENDICES

Appendix A: Scoring Table

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Principle 1	A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.
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1.1	Management Outcomes:
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1.1.1	Stock Status: The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing	It is <u>likely</u> that the stock is above the point where recruitment would be impaired.	It is <u>highly likely</u> that the stock is above the point where recruitment would be impaired. The stock is at or fluctuating around its target reference point.	There is a <u>high degree of certainty</u> that the stock is above the point where recruitment would be impaired. There is a <u>high degree of certainty</u> that the stock has been fluctuating around its target reference point, or has been above its target reference point, <u>over recent years</u> .
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Scoring Comments 6B

It is highly likely that the stock is above the point where recruitment would be impaired.
The Working Group rejected the 2010 stock assessment on the basis that the model was unable to explain the apparent decrease in biomass. Instead, they have based the assessment on recent acoustic surveys. The 2009 and 2010 surveys estimate current biomass to be around 28 000 t compared to the B₀ estimates of around 60 000t from the stock assessment model (based on the mean recruitment but excluding the very high 2002 year class). However, all these estimates remain imprecise.

The 2011 Plenary report (87_SBW_2011) describes the stock as “likely” to be above the limit reference point, but this appears to only account for the acoustic survey errors for each survey separately, and discounts other information. This was used as the basis for the precautionary advice in applying the harvest control rule (PI 1.2.2). However, it was the combined survey results that led the Working Group to revise their biomass estimate.

In interpreting the biomass surveys of 2007 and 2008, either the recent surveys are (negatively) biased or there has been a catastrophic mortality event in 2008/09. The problems of interpretation of the data greatly contribute to uncertainty over the current status of the stock. However, given the recent surveys already provide a precautionary estimate of the size of the stock, and both provide very similar estimates, each independently suggesting that there is less than 40% probability the stock is below the limit reference point, the joint probability (assuming they are independent sampling for the same biomass) for the two estimates combined indicate that the stock is highly likely (<20%) to be below the soft limit reference point. Taking into account the possibility that estimates are negatively biased (e.g. the stock has dispersed rather than just declined), would further decrease this probability

The stock is at or fluctuating around its target reference point.
Although imprecise, the best estimate available suggests the stock has returned to the long term mean abundance close to the target reference point. This point is based on average recruitment excluding large infrequent year classes that seem to arrive in these populations from time to time over the decades. However, given the current problems with the stock assessment, it is not possible to be certain that the stock has returned to the target reference point because the assessment is currently too imprecise. As of 2008, there would have been a high degree of certainty that

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>the stock was above the target reference point. With the significant apparent reduction in stock size, this can no longer be claimed. However, the median biomass estimate from the surveys is above 40% B₀ level, confirming that stock has most likely returned to its target level. This meets the SG80 requirements</p>			
<p>Score 6B: 80</p>			
<p>Because the surveys show that the biomass is within the target region, and highly likely to be above the point where recruitment would be impaired, the stock meets the 80 guideposts. However, the current assessment is too imprecise to meet any of the SG100 requirements.</p>			
<p>Scoring Comments: 6I</p>			
<p>There is a <u>high degree of certainty</u> that the stock is above the point where recruitment would be impaired.</p>			
<p>The current spawning stock biomass (2009) is well above the proposed limit reference point (B_{20%}). The lower 95% credible interval for the most pessimistic base run exceeds the limit reference point by a significant margin (95% CI 27–57% B₀). Projections of the stock biomass based on likely catches set 2010 onwards suggest that the biomass will increase due to the entry of a strong year class.</p>			
<p>The stock is at or fluctuating around its target reference point.</p>			
<p>The fishery is managed so that projections based on fixed TACC show a low probability of the stock falling below 20% B₀ and around an interim target of 40% B₀. For the current TACC until 2009, the probability of being below the target has been less than 2.5%, and should continue to be less than this for the current TACC of 23 000t. The stock size is projected to rise with the arrival of a strong year class entering the fishery. There is therefore an implicit target region for the biomass and fishing mortality within which the stock is maintained. A more explicit and precise definition of the target region is required for a higher score.</p>			
<p>Score 6I: 90</p>			
<p>Because the stock assessment shows that the biomass is well above the limit, and within the target region, the performance indicator meets one 100 and one 80 scoring guidepost requirements.</p>			
<p>Scoring Comments 6R</p>			
<p>It is highly likely that the stock is above the point where recruitment would be impaired.</p>			
<p>The model based assessment of this stock has not been updated since 2002, but the working group believes that recent catch levels (average 380 t since 2002) are unlikely to have made much impact on stock size. In the last two years catches have increased, in line with some indications that the population has increased in size. An increase in stock size has not been confirmed from the 2009 acoustic survey, however, although there is no evidence of depletion either. Although the biomass and reference points have not been estimated very precisely, , the stock would very likely be above any limit point. The level of stock status precision is consistent with the level of exploitation, it only being necessary to show that the stock is above a level that would impair recruitment, not its precise state. However, the lack of precision currently does increase risks and prevents the fishery meeting the SG100</p>			
<p>The stock is at or fluctuating around its target reference point.</p>			
<p>The precise status of the stock is not known, but available evidence suggests that it is most likely above the interim target reference point. Although there is not a precise definition of the target reference point for this stock (see PI 1.1.2), there is a target region for the biomass and fishing mortality within which the stock is maintained. The catches have been low enough so that the working group believes that the current biomass is above the level that will support the MAY (proxy for MSY). This has been largely confirmed by an acoustic survey in 2009 (which also contradicted reports that the biomass was increasing). However, information is too imprecise to be able to claim the stock is above this point with a high degree of certainty.</p>			
<p>Score 6R: 80</p>			
<p>Because the stock assessment shows that the biomass is highly likely to be above the limit, and within the target region, the performance indicator meets the 80 scoring guidepost requirements.</p>			

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Audit Trace References
<p>Plenary Southern Blue Whiting Report 2009</p> <p>Plenary Southern Blue Whiting Report 2011</p> <p>Hanchet, S.M.; Blackwell, R.G.; Stevenson, M.L. (2006) Southern blue whiting (<i>Micromesistius australis</i>) stock assessment and CPUE analysis for the Campbell Island Rise for 2006. New Zealand Fisheries Assessment Report 2006/41.45 p.</p> <p>Dunn, A.; Hanchet, S.M (2011). Southern blue whiting (<i>Micromesistius australis</i>) stock assessment for the Campbell Island Rise for 2009–10. (IN REVIEW)</p> <p>Hanchet, S.M.; Dunn, A. (2010). Review and summary of the time series of input data available for the assessment of southern blue whiting (<i>Micromesistius australis</i>) stocks. New Zealand Fisheries Assessment Report 2010/32.</p> <p>O’Driscoll, R.L. and Dunford, A.J. (2010a). Acoustic biomass estimates of southern blue whiting on the Bounty Platform and Pukaki Rise from F.V. A Buryachenko in 2009. Report prepared for the Deepwater Group Ltd. NIWA WLG2010-15. 34p</p> <p>O’Driscoll, R.L and Dunford, A.J (2010b) Acoustic biomass estimates of southern blue whiting on the Bounty Platform and Pukaki Rise from A Buryachenko in 2009. PowerPoint Presentation.</p> <p>DRAFT</p> <p>O’Driscoll R. L.; 2011a. Acoustic biomass estimates of southern blue whiting on the Bounty Platform in 2010. NIWA Project: DWG11301. DRAFT</p> <p>O’Driscoll R. L., 2011b. Industry acoustic surveys of spawning southern blue whiting on the Bounty Platform and Pukaki Rise 2004-09. New Zealand Fisheries Assessment Report 2011/17 53p. DRAFT</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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1.1.2	<p>Reference Points: Limit and target reference points are appropriate for the stock.</p>	<p><u>Generic</u> limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.</p>	<p>Reference points are appropriate for the stock and can be estimated.</p> <p>The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.</p> <p>The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome.</p> <p>For low trophic level species, the target reference point takes into account the ecological role of the stock.</p>	<p>The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of relevant <u>precautionary issues</u>.</p> <p>The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome, <u>or a higher level</u>, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.</p>
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Scoring Comments (All stocks)

Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category. Reference points are appropriate for the stock and can be estimated.

The reference points are based on estimates of the unexploited biomass (B_0) for all stocks. As standard practice with New Zealand Harvest Strategy Standard, there are a hard and soft limit reference points at 10% and 20% respective of the unexploited biomass, and an interim target has been set at 40% B_0 . (B_{MSY} proxy) or above. These These reference points can be estimated and updated as new information becomes available. Stock assessments are used to estimate the unexploited biomass using statistical catch-at-age models, available information on the population dynamics and biomass surveys.

The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.

The soft limit reference point is set at a level above the point where reproductive capacity is impaired. The point is appropriate based on what is known of the population dynamics and is consistent with MSC guidance (default 20% B_0) which indicates the level of risk aversion required. Available evidence indicates that the stocks are maintaining their levels under exploitation and that in some cases stocks have recovered rapidly when the risk of the biomass being below the limit has been too high. Note that this limit reference point is treated in scoring this PI as a “soft” limit reference point, not the “hard” limit reference point, which is here considered below the limit reference point used for certification purposes and therefore not used in scoring. . There is no stock recruitment relation estimated for any of the stocks, but available evidence suggests recruitment has not been significantly affected by past exploitation in this fishery, although evidence is limited. Research would be required on factors affecting recruitment before this or an alternative limit reference point might be justified based on relevant precautionary issues, meeting the SG100.

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome.

An interim target reference point has been defined as 40% B_0 , which is good practice and consistent with FAM v2 guidance for a BMSY proxy. The risk that the stock will fall below the limit reference point if the stock is kept around this target, given the current level of data collection and the harvest strategy, is low. The intent is to maintain the stock at high productive levels, which is consistent with targets at or above B_{MSY} . Precise estimates of biomass are not available, but the probability for the relative biomass under exploitation has been estimated for all three stocks and is adequate for determining whether this objective is being achieved.

The population dynamics include infrequent very large recruitments, as appears to be occurring currently for SBW6I and has occurred for SBW 6B, which cause large, natural fluctuations in biomass. The target is attained by applying a relatively constant exploitation rate (0.2) as a proxy for FMSY, which has demonstrably been maintained. Given what is known about the population dynamics of the stock, this provides a reasonable and precautionary exploitation level. A higher score under the second scoring issue would require improved justification for a target reference point based on a defined level of precaution and the ecological role of the stocks, for example.

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Southern blue whiting is not a low trophic level species.

Score all stocks: 80

The reference points meet the 80 score requirements. A more precise definition of a target reference point or range is required to improve this score.

Audit Trace References

Plenary Southern Blue Whiting Report 2009
 Plenary Southern Blue Whiting Report 2011
 Southern Blue Whiting Harvest Strategy
 Haist, V., Stokes, K. (2007) Management Strategy Evaluation for Campbell Island Rise Southern Blue Whiting. SeaFIC. Draft. September, 2007.
 Ministry of Fisheries. National Deepwater Plan: Fishery specific chapter for Southern Blue Whiting (Finalized Aug 2011)
 Dunn, A.; Hanchet, S.M (2011). Southern blue whiting (*Micromesistius australis*) stock assessment

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>1.1.3</p>	<p>Stock Rebuilding: Where the stock is depleted, there is evidence of stock rebuilding.</p>	<p>Where stocks are depleted rebuilding strategies which have a <u>reasonable expectation</u> of success are in place.</p> <p>A rebuilding timeframe is specified for the depleted stock that does not exceed the shorter of <u>30 years</u> or <u>3 times its generation time</u>. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.</p> <p>Monitoring is in place to determine whether they are effective in rebuilding the stock within a <u>specified</u> timeframe.</p>	<p>Where stocks are depleted rebuilding strategies are in place.</p> <p>A rebuilding timeframe is specified for the depleted stock that does not exceed the shorter of <u>20 years</u> or <u>2 times its generation time</u>. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.</p> <p>There is <u>evidence</u> that they are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within a <u>specified</u> timeframe.</p>

Scoring Comments
<p>The stock is currently around the target reference area, so rebuilding is not necessary and this performance indicator does not apply.</p>
<p>Score: N/A</p>
Audit Trace References

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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1.2	Harvest Strategy (management)		
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1.2.1	Harvest Strategy: There is a robust and precautionary harvest strategy in place	<p>The harvest strategy is <u>expected</u> to achieve stock management objectives reflected in the target and limit reference points.</p> <p>The harvest strategy is <u>likely</u> to work based on prior experience or plausible argument.</p> <p><u>Monitoring</u> is in place that is expected to determine whether the harvest strategy is working.</p>	<p>The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy <u>work together</u> towards achieving management objectives reflected in the target and limit reference points.</p> <p>The harvest strategy may not have been fully tested but monitoring is in place and <u>evidence</u> exists that it is achieving its objectives.</p>	<p>The harvest strategy is responsive to the state of the stock and is <u>designed</u> to achieve stock management objectives reflected in the target and limit reference points.</p> <p>The performance of the harvest strategy has been <u>fully evaluated</u> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.</p> <p>The harvest strategy is <u>periodically reviewed and improved</u> as necessary.</p>
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Scoring Comments (All stocks)

The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.

The statement of intent and harvest strategy standard are consistent with the MSC standard. The strategy aims to “provide a consistent and transparent framework for setting fishery and stock targets and limits and associated fisheries management measures, so that there is a high probability of achieving targets, a very low probability of breaching limits, and acceptable probabilities of rebuilding stocks that nevertheless become depleted, in a timely manner”. The TACC, ACE and Deemed Value system work together to provide a flexible framework which should allow management to maintain the stock above the limit reference point. There is evidence that the management process applies a feedback approach to ensure that the implemented strategy is working.

SBW has mainly been managed using a strategy which explicitly aims to maintain stocks above the limit reference point and around the target as far as is practical. The strategy has resulted in fluctuating TACCs, but allows the fishery to take advantage of the highly variable recruitment.

While the harvest strategy standard provides a framework, it falls short of a full management strategy due to the lack of detail defining its implementation, which prevents higher scoring. The strategy does not define specific action that will be taken under different circumstances and leaves scope for implementation which may not be compatible in the short term with the MSC standard. Furthermore, while the strategy clearly responds to levels of risk facing stocks by altering TACC and initiating research or more intense monitoring as appropriate, this response is not formally defined, but depends on decision-making based on on-going expert advice. All evidence to date on implementation implies that the harvest strategy has and will meet the MSC requirements.

The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.

The harvest strategy has been published and is in the public domain, but is imprecise enough to allow some flexibility in the year to year implementation. This presents some problems for its

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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evaluation. The implications of uncertainty on the performance of the harvest strategy have been tested formally through a management strategy evaluation, although this required interpretation of the harvest strategy into a more precisely defined harvest control rule, which is not actually implemented. The harvest strategy has not been in place sufficiently long that it is possible to evaluate fully its performance empirically. The estimated biomass for each stock appears consistent with the strategy's objectives and the current management controls are set to maintain stocks at appropriate levels. The harvest strategy attempts to take account of what is thought to be relatively rare events of strong recruitments every 20-30 years. The previous strong recruitment in 1991 no longer makes a significant contribution to the 6I spawning stock, but the stock has been stable since 1995 and is now experiencing another strong recruitment allowing an increase in the TACC. The strong recruitment to stock 6B has unexpectedly declined, and led to halving the TACC in 2011. Therefore, available information from scientific and management reports indicates that the strategy is being applied appropriately and achieving objectives.

Although full stock assessments are not undertaken annually, stock status indices (catches, abundance indices and age compositions) are updated each year. The level of information required is commensurate with the perceived risks for each stock. Increased information is now required for SBW6R in response to increases in catches on this stock. Information from the monitoring and stock assessments are used as the basis for providing management advice and evaluating management performance.

The harvest strategy is periodically reviewed and improved as necessary.

There is a process of review through the sustainability round, and results of this review appear in the various reports, including requests for sensitivity runs and discussion of uncertainty. In addition, a full external review of the harvest strategy has been conducted in 2007. There is clear evidence that there is an intention to improve the harvest strategy and the decision-making process, and some improvements from this review are being implemented.

Score all stocks: 85

The statement of intent and harvest strategy standard clearly meet the requirements for the MSC standard in respect of controlling harvest to a sustainable level, which is being monitored and has been tested to some extent. In addition, monitoring and testing of the harvest strategy is adequate given the current state of the resource and low exploitation rate; therefore the fishery meets the 80 guide posts and with evidence of external review, one of the 100 guideposts.

Audit Trace References

- Harvest Strategy Standard (Ministry of Fisheries 2008)
- Initial Position Papers and Final Advice Papers MFish 2008.
- Plenary Southern Blue Whiting Report 2009
- Plenary Southern Blue Whiting Report 2011
- Allen, Buchanan and Murray (2007)
- MFish Statement of Intent for 2008-2013.
- Ministry of Fisheries. National Deepwater Plan: Fishery specific chapter for Sothern Blue Whiting (Finalized Aug 2011)
- MFish 2010 Short-Medium Term Management of the Subantarctic Southern Blue Whiting Fisheries

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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1.2.2	Harvest control rules and tools: There are well defined and effective harvest control rules in place	<p><u>Generally understood</u> harvest control rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.</p> <p>There is <u>some evidence</u> that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.</p>	<p><u>Well defined</u> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.</p> <p>The <u>selection</u> of the harvest control rules takes into account the <u>main</u> uncertainties.</p> <p><u>Available evidence indicates</u> that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules</p>	<p>The <u>design</u> of the harvest control rules take into account a <u>wide</u> range of uncertainties.</p> <p><u>Evidence clearly shows</u> that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.</p>
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Scoring Comments: All Stocks

Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.
The harvest control rule is defined in relation to the “hard” and “soft” limit reference points. The Harvest Strategy (HSS) aims to maintain the stock at or around the target RP. The level at which the exploitation rate is required to decline is the soft limit RP (0.2 B₀). Should the stock fall below this limit, recovery to return above it is required within a specified time period. The fishery can be considered for closure should the biomass fall below the hard limit RP.

For certification purposes, the LRP is considered here to be the “soft” limit. Action to be taken should the stock fall below the target but be above the soft limit is not explicitly set within the strategy. The intention of the strategy is clear and actual decisions can be monitored through information made publicly available. This information is sufficient to allow a direct comparison between this intention and the likely consequences of the decision being made.

A “well-defined” harvest control rule will be transparent and testable. The harvest control rule is transparent, in that it will be clear whether the rules are being observed or not. While there is some flexibility allowed in implementation, scientific advice is clearly stated in relation to the HSS and therefore it will be possible to check if this advice is not taken and adequate reason is not given for alternative action. Any reason for not adhering to the harvest control rule can be readily evaluated against the MSC requirements. The harvest control rule has also been tested in the sense that there has been careful consideration of how the rules will work in the local management system and recognition that the approach should, based upon expert opinion, enable the fishery to maintain stock sizes at acceptable levels, consistent with MSC principles.

The selection of the harvest control rules takes into account the main uncertainties.
The main uncertainties are accounted for in the assessment through sensitivity analyses and through the Bayesian fitting method. The management advice clearly takes account of these

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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uncertainties. Uncertainties which have been accounted for and/or explored include: the unfishable average biomass level (B_0), natural mortality rate, selectivity, recruitment, age composition, and acoustic survey catchability and observation error. The stock assessment used in the harvest control rule takes account of sample error and a “process error”, which is added to weight the indices more appropriately and account for errors that cannot be estimated. For southern blue whiting, the greatest uncertainty is most likely the infrequent high recruitments that are thought to occur. Two of these have now been detected since monitoring began, although previously before the current level of monitoring, similar recruitments are thought to have occurred. The harvest control rule, which is applied through the sustainability round, relies on annual monitoring of the biomass to set the TACC to appropriate levels accounting for the recruitment uncertainty. For SBW6R, monitoring was limited to trawl CPUE and catches, which was considered adequate at low catches. More recently, for all three stocks, there has been greater dependence on direct annual biomass estimates from acoustic surveys which allow quotas to be set based on the observed biomass. This is likely to bias quotas downwards as the survey estimate is most likely to miss biomass that is there and not likely to detect biomass which is not. We believe that this accounts for the main uncertainty as illustrated by the SBW6B biomass recent biomass fluctuation. It cannot be demonstrated that the harvest control rule is designed. The current harvest control rule has clear intentions, but relies on appropriate management responses through the sustainability round. A management strategy evaluation has been conducted that demonstrates the harvest strategy is generally robust to uncertainty, but has interpreted the strategy using decision rules that are only an approximation of those actually used. Further research on the population dynamics might allow a rule to be designed

Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.

The primary tool for implementing the harvest control rule is the TAC system. This system controls catches to achieve a target TACCs or below. Between 1992/3 and 2010/11, catches for 6I have in most cases been below the TACC (maxima of 48% below in 1996/7 and of 11% above in 2002/3) and only exceeded it in 6 out of 18 years. Since 1992/3 catches in 6B have in most cases been below the TACC, although the TACC has been exceeded since 2005-09, but only by between 299 to 895 t in each year. The 6R TACC is currently set at 5 500 t, which is well above the recommendation for the CAY of 2 700 t. Catches have in practice been well below both the TACC and the CAY estimate since 1993, although catches have recently increased towards this TACC in the last few years. An acoustic survey on SBW 6R conducted in 2009 seemed to confirm that the stock has been stable. The system penalises catches above the TACC through an additional tax (deemed value), which discourages catches that are not taken against the TACC, but also discourages discarding. Catches have exceeded the TACC and discarding have occurred although only to a limited degree. (Discarding is legal but needs to be recorded by a scientific observer and counts against the vessel quota). This flexibility together with the short duration of the approach prevents the evidence clearly showing that it works. If the harvest strategy works as intended, with current monitoring should be sufficient to allow the 100 guidepost for this scoring issue to be met.

Score all stocks: 80

The harvest control rule meets all the requirements for the 80 scoring guideposts

Audit Trace References

- Plenary Southern Blue Whiting Report 2009
- Plenary Southern Blue Whiting Report 2011
- Harvest Strategy Standard (Ministry of Fisheries 2008)
- Initial Position Papers and Final Advice Papers MFish 2008.
- Ministry of Fisheries. National Deepwater Plan: Fishery specific chapter for Southern Blue Whiting (Finalized Aug 2011)
- Haist, V., Stokes, K. (2007) Management Strategy Evaluation for Campbell Island Rise Southern Blue Whiting. SeaFIC. Draft. September, 2007.
- MFish Statement of Intent for 2008-2013.

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>1.2.3</p>	<p>Information / monitoring: Relevant information is collected to support the harvest strategy</p>	<p><u>Some</u> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.</p> <p>Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.</p>	<p><u>Sufficient</u> relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.</p> <p>Stock abundance and fishery removals are <u>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</u>, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.</p> <p>There is good information on all other fishery removals from the stock.</p>

Scoring Comments 6B
<p>Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy. In addition, there is a comprehensive range of information on fleet composition, fishery removals and some environmental information which is not directly relevant to the current harvest strategy.</p> <p>The stock forms spawning aggregations which aid in identification of management units and monitoring stock size, and management unit designation is appropriate. Stock abundance is estimated from a stock assessment which requires data on catches, abundance indices, age and size composition. Otolith ageing has been validated. Sufficient data are all available to obtain good estimates of stock abundance from the assessment. Information on all vessels is held through a registry and licence system. Vessel activity is monitored through VMS and an observer programme. Monitoring and collection of information not directly used in the harvest strategy includes mapping of spawning aggregations, remote sensing environmental data, productivity, physical oceanographic processes and bathymetry. There remain gaps in the information, as illustrated by the lack of understanding of the apparent rapid recent decline in biomass in the aggregations, which may only be explained by a better understanding of the life history of the species.</p> <p>All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.</p> <p>Catches are reported by area and checked at landing sites as well as through the observer programme, and should be accurate enough for the stock assessment. Age and length compositions are taken through the observer programme. Fishery independent acoustic resource surveys have been carried out since 1993 usually every one or two years providing a fishery independent estimate of biomass. The acoustic biomass estimates depend on absorption co-efficient and a target strength relationship, which have been updated based on the best available scientific evidence. The accuracy and frequency of the monitoring are more than adequate to support the harvest control rule.</p> <p>During the 2008 and 2009 seasons, acoustic surveys of the Bounty Platform (6B) were undertaken leading to revised downward estimates of the spawning stock size. Fishery independent</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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acoustic surveys have recently been very frequent as they monitor the high recent biomass and its decline. Other abundance indices include trawl surveys and commercial CPUE, which are considered less reliable. The absolute abundance estimates from the recent acoustic surveys were used to set the TACC in 2011.

There is good information on all other fishery removals from the stock.

There are no other vessels catching southern blue whiting. All QMS species such as southern blue whiting, are required to be landed. The level of illegal and unreported catch is thought to be low. Two vessels' operators were convicted for area misreporting in 2002–03 catching about 204 t on the Campbell Island Rise (SBW 6I), but reporting against quota for the Pukaki Rise (SBW 6R), and separately 480 t caught on the Campbell Island Rise were reported against quota for the Auckland Islands Shelf (SBW 6A). Corrections were applied to catches for this detected misreporting. Scientific observers have also reported discards of undersize fish and accidental loss from torn or burst codends. There is no quantitative estimate of this mortality and no estimates of unrecorded discards have been considered in the stock assessments. Overall, non-recorded mortality is very likely to be small compared to the reported catch and should not affect the stock assessment and scientific advice.

Score 6B: 90

The level information and monitoring has been recently comprehensive for monitoring the fishery and stock assessment, and hence for implementing the harvest strategy, meeting all 100 requirements, with the exception that information on stock size has not been as collected as frequently as it currently is and the biomass time series is relatively short (since 2004 with the current survey vessel), and therefore there is still significant uncertainty in the estimate of biomass preventing a full 100 score.

Scoring Comments 6I

Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy. In addition, there is a comprehensive range of information on fleet composition, fishery removals and some environmental information which is not directly relevant to the current harvest strategy.

Stock abundance is estimated from a stock assessment which requires data on catches, abundance indices, age and size composition. Otolith ageing has been validated. Sufficient data are all available to obtain good estimates of stock abundance from the assessment. Information on all vessels is held through a registry and licence system. Vessel activity is monitored through VMS and an observer programme. Monitoring and collection of information not directly used in the harvest strategy includes mapping of spawning aggregations, remote sensing environmental data, productivity, physical oceanographic processes and bathymetry. The stock forms spawning aggregations which aid in identification of management units and monitoring stock size. Although some information is comprehensive, on the fleet for example, certain aspects of the stock dynamics are not well understood preventing the higher score.

All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.

Catches are reported by area and checked at landing sites as well as through the observer programme. Age and length compositions are taken through the observer programme. Fishery independent acoustic resource surveys recorded since 1993 usually every two years (the last one used in the assessment was in 2009) and a CPUE index are available, although the relationship between CPUE and biomass is thought to be too variable to use as an abundance index. The acoustic surveys provide some age structure information and reasonably accurate biomass estimates. The data can support the statistical catch-at-age model and information for the harvest control rule is monitored with high frequency and high certainty compared to the level of precaution applied.

There is good information on all other fishery removals from the stock.

There are no other vessels catching southern blue whiting. All QMS species such as southern blue whiting are required to be landed. The level of illegal and unreported catch is thought to be low. Two vessels' operators were convicted for area misreporting in 2002–03 catching about 204 t on the Campbell Island Rise (SBW 6I), but reporting against quota for the Pukaki Rise (SBW 6R), and separately 480 t caught on the Campbell Island Rise were reported against quota for the Auckland Islands Shelf (SBW 6A). Corrections were applied to catches for this detected misreporting. Scientific observers have also reported discards of undersize fish and accidental loss from torn or burst codends. There is no quantitative estimate of this mortality and no

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
estimates of unrecorded discards have been considered in the stock assessments. Overall, non-recorded mortality is very likely to be small compared to the reported catch and should not affect the stock assessment and scientific advice.			
Score 6I: 90			
The level information and monitoring is sufficient for the stock assessment and hence for implementing the harvest strategy, meeting all 80 requirements. In addition, recent data acquisition together with the stock assessment and application of the harvest control rule has demonstrated that all data are collected with the necessary accuracy, and that uncertainties are well understood, which meets the second scoring issue SG100. Overall, one out of two SG100 are met, resulting in a score of 90.			
Scoring Comments 6R			
Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy. In addition, there is a comprehensive range of information on fleet composition, fishery removals and some environmental information which is not directly relevant to the current harvest strategy.			
The stock forms spawning aggregations which aid in identification of management units and monitoring stock size. Stock abundance has been estimated from a stock assessment in 2002 which used data on catches, abundance indices, age and size composition. Otolith ageing has been validated. Information on all vessels are held through a registry and licence system. Vessel activity is monitored through VMS and an observer programme. The acoustic surveys were carried out since 1993, but none have been conducted 2002-2008 because catches remained very low during this period. Monitoring and collection of information not directly used in the harvest strategy includes mapping of spawning aggregations, remote sensing environmental data, productivity, physical oceanographic processes and bathymetry.			
All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.			
Catches are reported by area and checked at landing sites as well as through the observer programme. Age and length compositions are taken through the observer programme. Fishery independent acoustic resource surveys have been recorded since 1993. Acoustic surveys were carried out in 2009 and in 2010 and further biennial acoustic surveys are scheduled in the MFish 10-year research plan, commencing in 2012. The sampling coefficient of variation is estimated for the biomass of each survey. There are also trawl surveys, with recent increased sampling this stock, although their accuracy as an abundance index for this species is questioned. Commercial CPUE data are also available, although the relationship between CPUE and biomass is thought to be too variable to use as an abundance index. The biennial survey indices are reasonably accurate, their uncertainties well understood, and they are suitable for use for the harvest strategy and harvest control rule.			
There is good information on all other fishery removals from the stock.			
There are no other vessels catching southern blue whiting. All QMS species such as southern blue whiting, are required to be landed. The level of illegal and unreported catch is thought to be low. Two vessels' operators were convicted for area misreporting in 2002–03 catching about 204 t on the Campbell Island Rise (SBW 6I), but reporting against quota for the Pukaki Rise (SBW 6R), and separately 480 t caught on the Campbell Island Rise were reported against quota for the Auckland Islands Shelf (SBW 6A). Corrections were applied to catches for this detected misreporting. Scientific observers have also reported discards of undersize fish and accidental loss from torn or burst codends. There is no quantitative estimate of this mortality and no estimates of unrecorded discards have been considered in the stock assessments. Overall, non-recorded mortality is very likely to be small compared to the reported catch and should not affect the stock assessment and scientific advice.			
Score 6R: 90			
The level of information and monitoring is sufficient for the harvest strategy, meeting all SG80 requirements. It addition, specific information required for the harvest control rule is available at high frequency and a high degree of certainty given the exploitation level, which meets one of the SG100 requirements, and therefore a score of 90 is awarded.			
Audit Trace References			

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Plenary Southern Blue Whiting Report 2009
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Haist, V., Stokes, K. (2007) Management Strategy Evaluation for Campbell Island Rise Southern Blue Whiting. SeaFIC. Draft. September, 2007.
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Dunn, A.; Hanchet, S.M (2011). Southern blue whiting (*Micromesistius australis*) stock assessment for the Campbell Island Rise for 2009–10. (IN REVIEW)

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>1.2.4</p>	<p>Assessment of stock status: There is an adequate assessment of the stock status</p>	<p>The assessment estimates stock status relative to reference points.</p> <p>The major sources of uncertainty are identified.</p>	<p>The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to reference points.</p> <p>The assessment takes uncertainty into account.</p> <p>The stock assessment is subject to peer review.</p> <p>The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.</p> <p>The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.</p> <p>The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.</p> <p>The assessment has been <u>internally and externally</u> peer reviewed.</p>

Scoring Comments 6B
<p>The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.</p> <p>In 2010, a stock assessment was carried out for the Bounty Platform stock using all abundance and catch data to 2009. However this age structured model was unable to fit the combined acoustic and catch-at-age data, and the assessment was rejected on the basis that it state of the stock was possibly positively biased, and advice based on the stock assessment would not be precautionary. The current assessment therefore was based on projections based on the most recent acoustic survey data only. Conservative estimates of current annual yield (CAY) were made by applying the reference fishing mortality to a conservative estimate of current vulnerable biomass based on the acoustic survey. This combines the assessment based on the normal stock, but takes account of the periodic high recruitment to biomass periodically evident for this species. Given the current lack of scientific understanding for infrequent strong year classes, this approach is appropriate for the stock and harvest control rule.</p> <p>The rejection of the stock assessment model suggests that more research is required to understand the dynamics of this species. However, the model is applying current “best practice” in stock assessment. Unexpected events, such as the apparent catastrophic decline in biomass observed in 2008, cannot be predicted or explained by age structured or other population models without the addition of external explanatory variables. The response of the Working Group has been appropriate and further improvements in the model are expected as the time series is extended.</p> <p>The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.</p> <p>A major uncertainty when relying on acoustic biomass estimates is associated with the assumed target strength and sampling error. These have been examined and considered for the current estimates of biomass and in giving management advice, as shown by improvements in acoustic biomass estimates. Reference points are based on previous stock assessment (CASAL), which expresses estimates as Bayesian probabilities. While biomass estimates are expressed as likelihoods only, they can still be interpreted probabilistically. The status is reported based on probability.</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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The assessment has been tested for robustness to some extent. Alternative hypotheses and assessment approaches have not been fully explored.
 There has been a reliance on a standard age structured model (CASAL), which did not fit the data in the 6B case. However, without additional information, it is difficult to see how any model could fit the large increase and subsequent decrease in biomass evident from the observations made through the acoustic survey. The scientific response has been appropriate by choosing to use the acoustic biomass estimate and increase the frequency of surveys. Other approaches beyond the use of the CASAL model (and its variations) have not been explored.

The stock assessment is subject to peer review.
 The stock assessment undergoes scrutiny by the working group, but there has been no external scientific peer review of the stock assessment, although the decision making process has been reviewed (see PI 1.2.1). The most recent modelling of the 6B stock was rejected as unreliable, so the current assessment is based on a more empirical approach.

Score 6B: 90

The stock assessment meets two out of four SG100, and therefore a score of 90 has been awarded.

Scoring Comments: 6I

The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.
 The last stock assessment for was carried out with data up to the end of the 2008–09 fishing year, implemented as a Bayesian model using the standard stock assessment software CASAL v2.22. The assessment used fishery independent abundance indices pre-recruit and recruited stock (9 acoustic surveys on ages 2, 3 and 4+ carried out 1993-2009), catch-at-age from the commercial fishery and estimates of biological parameters. The population model accounts for different sexes, maturity, growth and mortality. Stock structure is based on observed spawning aggregations and bathymetry. Catches are projected into the medium term which is appropriate for a TACC based control and non-annual acoustic surveys. A full stock assessment was completed in 2010 and there is evidence of annual review of stock status.

The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
 The assessment is Bayesian and therefore results from the assessment are all probabilistic. The modelling attempts to account not only for sampling error, but some other errors associated with random processes and structure. Additional variance, assumed to arise from differences between model simplifications and real world variation, was added to the sampling variance for all observations in all model runs. The sensitivity analyses are decided by the Working Group. As well as the reported analyses, other checks and analyses are undertaken on request of the working group and reported verbally even if not reported in the stock assessment or plenary documents. An outline of recommended areas for future research is provided in the report. The working group considered seven runs in the 2010 assessment. The base run, which the working group believes provided the most plausible results, used an aged-based model for selectivity and included an informed prior on age 4+ catchability and on natural mortality. A length-based selectivity model was used as a sensitivity run. Other sensitivities were run by the assessment scientists but not adopted by the working group. The final reported results were given as the median and 95% credible intervals, so risk was measured relative to 2.5% probability of falling below reference points.

The assessment has been tested for robustness to some extent. Alternative hypotheses and assessment approaches have not been fully explored.
 Diagnostics compare maximum posterior density (MPD) estimates of indices and age compositions with observed values. The diagnostics also examine residuals from the MPD estimates to check for unexplained patterns. Appropriate convergence tests are applied to the MCMC fits. However, retrospective analyses have not been conducted. The population model structure is based on the standard available in CASAL, and alternative models and structures have not been explored. Also, a management strategy evaluation has been conducted, although the operational model was basically the same as the assessment model. This nevertheless has allowed some further consideration of the key features of the population which need to be included in the population model.

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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The stock assessment is subject to peer review.
 The stock assessment undergoes scrutiny by the working group, but there has been no external scientific peer review of the stock assessment, although the decision making process has been reviewed (see PI 1.2.1).

Score 6I: 90

The stock assessments meets some but not all of the 100 score requirements, and therefore a score of 90 has been awarded.

Scoring Comments: 6R

The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to reference points.
 The assessment of the 6R stock has not been updated since 2002. The working group believes that recent catch levels (average 380 t since 2002) are unlikely to have made much impact on stock size. The last stock assessment was carried out for the Pukaki Rise stock using updated catch-at-age data and the results of the 2000 acoustic survey. The assessment used an aged structured model (separable Sequential Population Analysis; sSPA) rather than the more-advanced CASAL which has been used in more recent for southern blue whiting stock assessments. The model was fitted to landings, proportion-at-age data, and the pre-recruit and recruited acoustic survey indices. Estimates of biomass and yield for the Pukaki Rise stock were reported as very uncertain. However, the model based estimates using the reference case input parameters appeared likely to have underestimated the biomass (aged 4+ fish acoustic q estimate was 2.7 compared to a more realistic estimate of 1.4), and therefore was more precautionary. The acoustic q has been informed by other assessments, but recent improvements in estimates of target strength have not been included.

The assessment of current status has depended on observing that catches have remained low compared to any reasonable estimate of sustainable yield. Since 2008, catches have increased, which has led to increased monitoring of this stock. The assessment, based on the available indices, suggests that the risks so far have remain low. However, with the increased monitoring, it is likely that a new stock assessment can be carried out using a similar model to that used for SBW6I. This is an appropriate response, in that increased accuracy of the stock status is required as exploitation is increased.

The assessment takes uncertainty into account.
 The main sources of uncertainty will be the same as that for the stocks in other areas (6B, 6I). In contrast to more recent assessments of the other stocks, the 2002 6R assessment was not Bayesian and did not report results in a fully probabilistic way, although confidence intervals for parameters are given. Alternative hypotheses and assessment approaches have not been fully explored. One of the most significant sources of uncertainty on biomass and therefore the TACC would be the acoustic q parameter estimate. The assessment did consider alternative fixed values for the adult (age 4+) acoustic q within the realistic range between 0.65 and 2.8 as well as alternative fixed minimum and maximum exploitation rates. This suggested the minimum and maximum CAY to be 1700 t and 6900 t respectively.

The stock assessment is subject to peer review.
 The stock assessment undergoes scrutiny by the working group, but there has been no external scientific peer review of the stock assessment, although the decision making process has been reviewed (see PI 1.2.1).

Score 6R: 80

Although the stock assessment was not completed recently, it met all of the 80 score requirements through the available monitoring indices, and the assessment approach being appropriate to

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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the current level of risk. Full stock assessments similar to those used for 6I would be necessary for a higher score.

Audit Trace References

- Plenary Southern Blue Whiting Report 2009
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SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Principle 2	Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends		
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2.1	Retained non-target species		
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2.1.1	<p><i>Status:</i> The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species.</p>	<p>Main retained species are <u>likely</u> to be within biologically based limits or if outside the limits there are <u>measures</u> in place that are <u>expected</u> to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.</p> <p>If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.</p>	<p>Main retained species are <u>highly likely</u> to be within biologically based limits, or if outside the limits there is a <u>partial strategy</u> of <u>demonstrably effective</u> management measures in place such that the fishery does not hinder recovery and rebuilding.</p>	<p>There is a <u>high degree of certainty</u> that retained species are within biologically based limits.</p> <p>Target reference points are defined and retained species are at or fluctuating around their target reference points.</p>
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Scoring Comments: All stocks

Main retained species are highly likely to be within biologically based limits, or if outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.

Retained species are, by regulation, the Quota Management Species (QMS), which are retained on board. QMS are the subject of analytical stock assessments and active management that is based upon biologically based limits. Studies on observer catch composition data collected between 1 April 2002 and 31 March 2007 at the geographic scale of SBW6 indicated that 99% of the of the total estimated catch from all observed trawls was southern blue whiting, demonstrating the relatively clean nature of this fishery. About half of the remainder of the total catch comprised the three important commercial species; ling (0.2%), hake (0.1%), and hoki (0.1%), and over 80% of the non-southern blue whiting catch was comprised of the QMS species (i.e. mainly ling, hake, hoki, porbeagle shark, jack mackerel, and Ray’s bream). Stocks of the main retained species in LIN6, HAK1 and HOK1 are the subject of both frequent analytical stock assessments and TACC revisions. The remaining non-QMS species are generally not retained and are considered within 2.2.

The last assessment of the western ‘stock’ of hoki was performed in 2009. It indicates that the population is at ~ 36-39% B_0 . Based on the 2007 assessment, ling stocks LIN 5 and LIN 6 (but excluding fish on the Bounty Plateau) are ‘probably only lightly fished and current stock sizes are estimated to be well above B_{MAY} . Estimates of absolute current and reference biomass are unreliable, although B_0 is very unlikely to have been lower than 200 000 t. It is likely that the current TACC is sustainable, as current catches appear to be having only a small impact on biomass levels.’ Based on the 2007 assessment, the probabilistic range of current biomass for hake in HAK1 relative to B_0 ranged from 54-73%.

Other retained QMS species within SBW6 are subject to TACC limits. Assessments of jack mackerel have derived maximum constant yield estimates in JMA3, but in the absence of estimates of biomass and catch data series from a period of relatively constant fishing mortality, an updated estimate of MCY has been estimated for this fish stock. However, the small component of this stock of the overall catch in the fishery is noted. For the other species (porbeagle shark, Ray’s bream) TACCs are not based upon the results of analytical assessments and biologically based

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limits. The vulnerability of porbeagle shark is noted, but the relatively low catch levels when compared to the TACC (average catch per annum adjusted for observer coverage: ~16t, TACC: 215t) are also acknowledged.

Overall, the fishery is relatively 'clean', as noted within observer data, and the three most common non-target species caught are subject to stock assessments that indicate a high degree of certainty that these stocks are within biologically based limits. While there is some uncertainty for the minor retained species, the level of catch within the unit of certification is considered to highly unlikely to lead to overexploitation of the stock, and hence provide a high degree of certainty that retained species are within biological limits, hence a score of 100 is given for this element.

Target reference points are defined for the main retained species, although this is not the case for all QMS species. Stock assessment data for these species described above indicate that hoki is just below the target reference point, the ling stock may be around the target, although assessment outputs are uncertain, and the hake is above the target. The status of the small proportion of other retained QMS species is more uncertain. Therefore the second element of the SG100 cannot be met and a score of 80 is given.

Score: 90

The vast majority of the retained species (hake, hoki, ling) are highly likely to be within biologically based limits, and are fluctuating around target reference points. However, for other species, the status is less clear, although they are within TACC set limits, and the very low proportion of these other species in the catch is considered to provide a high degree of certainty that the retained species are within biologically based limits. However, the uncertainty over their status relative to target reference points (which have not been formalised for all species) reduces the score from 100.

Audit Trace References

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SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>2.1.2</p>	<p>Management strategy: There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.</p>	<p>There are <u>measures</u> in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.</p> <p>The measures are considered <u>likely</u> to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a <u>partial strategy</u> in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.</p> <p>There is some <u>objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or species involved.</p> <p>There is <u>some evidence</u> that the partial strategy is being <u>implemented successfully</u>.</p>

Scoring Comments: All stocks

There is a partial strategy in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding..

A key strategy for managing retained species in the unit of certification is an operational one – the near-clean nature of the fishing method. It is noted that the relative catch of non-target species is also lower in shorter tows.

For the small proportion of retained species in the catch (~1% by weight), the formal strategy (rather than a partial strategy) is the QMS framework. As a result, the majority of retained species are the subject of analytical stock assessments, and management action is based upon biological reference points and management plans are under development, under the QMS management regime. Not all retained species are subject to such detailed plans, commensurate with the level of catch within the fishery under consideration, but are the subject of TACC limits against which catches are monitored on an on-going basis. This strategy applies to a very small proportion of the overall catch and is appropriate for the level of retained species catch. A score of 100 is therefore given.

There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved..

Evidence is available through data collection and monitoring through the catch data and observer programme, directly from the fishery. These data demonstrates the relatively low catch weight of non-target species. Practical testing of the strategy for the main species has demonstrated confidence that the strategy works. Data are collected for the other QMS species and monitored for trends in catch and catch rates, and the absolute levels relative to the TACC. This strategy is based on information directly about the fishery, levels of catch, and the species themselves, and operational testing has shown the strategy is working. The second element of SG100 is therefore met.

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There is evidence that the operational strategy is being implemented successfully from the observer programme. For the relatively small quantities of key retained QMS species caught, further evidence comes from variations in the TACC, based upon stock assessment and observer/fishery monitoring data. However, it is noted that this does not apply to all QMS species caught, and hence the third SG100 element cannot be said to be met.

There is some evidence that the partial strategy is achieving its overall objective.

There is some evidence that the operational strategy and QMS framework management strategy approach is achieving its overall objectives for the QMS species through the stock assessment process and TACC management system. A score of 100 is therefore given.

Score: 95

There are operational strategies and QMS management procedures in place for maintaining retained species, and evidence shows that they are effective. However, it is noted that strategies are less effective for other species, although TACC set limits are in place. While the very low proportion of these other species in the catch is noted, the lack of a full strategy for these species reduces the score from 100.

Audit Trace References

- Bycatch species caught in southern blue whiting tows (by area)
- Clement and Associates Ltd (2009). Mitigating seabird interactions with trawl nets. DOC project MIT 2006/02. Interview with MFish
- Anderson, O. (2008). Progress Reports for MFish Project ENV2008-01: Fish and invertebrate bycatch and discards in southern blue whiting fisheries, 2002–2007

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>2.1.3</p>	<p>Information / monitoring: Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species.</p>	<p><u>Qualitative information</u> is available on the amount of main retained species taken by the fishery.</p> <p>Information is <u>adequate</u> to <u>qualitatively</u> assess outcome status with respect to biologically based limits.</p> <p>Information is adequate to support <u>measures</u> to manage <u>main</u> retained species.</p>	<p><u>Qualitative information</u> and some quantitative information are available on the amount of main retained species taken by the fishery.</p> <p>Information is <u>sufficient</u> to estimate outcome status with respect to biologically based limits.</p> <p>Information is adequate to support a <u>partial strategy</u> to manage <u>main</u> retained species.</p> <p>Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).</p> <p>Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.</p> <p>Information is <u>sufficient</u> to <u>quantitatively</u> estimate outcome status with a <u>high degree of certainty</u>.</p> <p>Information is adequate to support a <u>comprehensive strategy</u> to manage retained species, and evaluate with a <u>high degree of certainty</u> whether the strategy is achieving its objective.</p> <p>Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.</p>

Scoring Comments: All stocks
<p>Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery. Data on catch rates and the relative abundance of non-target catch species in the fishery are available from three main sources:</p> <ul style="list-style-type: none"> • The TCEPR (Trawl catch, effort and processing return) forms, which provide green weight, catch totals for the top five species (dependent on vessel size and fishing method) on a fishing-event basis, and daily summary of TACC species caught. • The Ministry of Fisheries observer data, which provides catch weight for all QMS and non-QMS species caught, on an observed tow-by-tow basis. This provides accurate and verifiable information, if on variable and patchy coverage). The observers monitored between 29% and 44% of trawls annually during the period 2002-2007. • Fishery independent industry-based and research vessel-based acoustic surveys and trawl surveys within the area provide (conservative) abundance estimates of key retained species. <p>The time series of catches, the monitoring of their trends, and the trends in catch rates allows the consequences for the status of affected populations for the minor TACC stocks encountered, which form a very small proportion of the overall catch. A score of 100 is therefore given for this element.</p> <p>Information is sufficient to estimate outcome status with respect to biologically based limits. Information is sufficient to quantitatively estimate outcome status with a high degree of certainty for the key QMS species caught, through the observer programme. However, information for other QMS species is more limited and quantitative estimates have not yet been developed, although qualitative assessments <u>could</u> be performed and these species represent a very small proportion of the overall catch. A score of 80 is therefore given, given the lack of certainty for all QMS species.</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Information is adequate to support a partial strategy to manage main retained species.
Information gathered for the key QMS species underpins stock assessments for these species, upon which TACC changes are based. This represents a comprehensive strategy, and evidence shows that the TACCs can be adjusted where necessary. The information for minor QMS species is sufficient to support the strategy that is in place, given that they are a small proportion of the overall catch, and allows action to be taken based upon catch and catch rate trends, however a high degree of certainty cannot be achieved on the basis of this information . A score of 80 is therefore given.

Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy)..
The observer programme, and requirement to record the catches of QMS species through logbooks, combined with regular fishery-independent surveys, provides sufficient detailed information to assess the ongoing mortalities of the main QMS species in particular, and the majority of the minor QMS species. For others, sufficient data continue to be collected to detect increases in both mortalities and risk level. A score of 100 is therefore given.

Score: 90

There is a comprehensive range of information collected through different methods to support the management of the QMS species. Information for the minor QMS retained species is sufficient to support the strategy, although quantitative assessments are not performed for these species and data collection is less complete. A score of 90 is therefore given.

Audit Trace References

Anderson, O. (2008). Progress Reports for MFish Project ENV2008-01: Fish and invertebrate bycatch and discards in southern blue whiting fisheries, 2002–2007
MFish (2009). Hake stock assessment summary
MFish (2009). Hoki stock assessment summary
MFish (2009). Ling stock assessment summary
MFish (2009). Rays bream stock assessment summary
MFish (2009). Porbeagle shark stock assessment summary
MFish (2009). Jack mackerel stock assessment summary
Interview with MFish
Bycatch species caught in southern blue whiting trawl target tows
Burns R., Kerr G., 2008 . Observer effect on fisher bycatch reports in the New Zealand ling (*Genypterus blacodes*) bottom longlining fishery
New Zealand Journal of Marine and Freshwater Research, 2008, Vol. 42: 23–32)

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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2.2	Discarded species (also known as “bycatch” or “discards”)		
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2.2.1	<p>Status The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups.</p>	<p>Main bycatch species are <u>likely</u> to be within biologically based limits, or if outside such limits there are mitigation <u>measures</u> in place that are <u>expected</u> to ensure that the fishery does not hinder recovery and rebuilding.</p> <p>If the status is poorly known there are measures or practices in place that are expected result in the fishery not causing the bycatch species to be biologically based limits or hindering recovery.</p>	<p>Main bycatch species are <u>highly likely</u> to be within biologically based limits or if outside such limits there is a <u>partial strategy</u> of <u>demonstrably effective</u> mitigation measures in place such that the fishery does not hinder recovery and rebuilding.</p>	<p>There is a <u>high degree of certainty</u> that bycatch species are within biologically based limits.</p>
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Scoring Comments: All stocks

As QMS species must be retained by regulation, only non-QMS species may be the subject of discarding - observer data provides information on the discard bycatch species and quantities (see 2.2.3) and hence allow the separation of retained and discarded species.

Due to the lack of information on status, but in light of the available information on catch levels, we have taken the following approach. The main bycatch species are defined by the MSC as ‘those considered to represent >5% of the catch, or as being particularly vulnerable’ (e.g. non-QMS elasmobranch species). For the purposes of this assessment, we have assumed that a species may be at risk where they represent >5% of the total catch, or are caught at levels greater than 10 tonnes per year where this species is considered of low productivity. We recognise that a species may have low abundance and high catchability, which may lead to incorrect estimation of status using these criteria. This is covered under PIs 2.2.2 and 2.2.3. This approach is comparable to that taken under Principle 1, in separating the determination of outcome from the management and information.

Main bycatch species are highly likely to be within biologically based limits or if outside such limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding.

Given the method of fishing, and the resulting clean nature of the southern blue whiting fishery, no bycatch species represent >5% of the catch. Indeed, QMS species comprise over 99% of the catch by weight. The most ‘common’ potentially vulnerable non-QMS species across the fishery are the rattails, with an estimated average catch per annum adjusted for observer coverage of around 5 tonnes. In our opinion, based upon available knowledge of related species, this catch appears highly unlikely to lead to significant impacts on the rattails population in New Zealand waters, and the low catch levels for the overwhelming majority of discarded species provides a high degree of certainty that those bycatch species are within biologically based limits. An intermediate score of 90 is therefore given

Score: 90

There are no main bycatch species within the fishery, due to its ‘clean’ nature of fishing, which represents a partial (operational) strategy, combined with the collection of information on the level of this bycatch through the observer programme. The level of annual catch of the potentially vulnerable rattail species is unlikely to hinder recovery or rebuilding. However, information

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does not allow judgement to be made on *all* bycatch species being within biologically based limits, as required to score closer to 100.

Audit Trace References

Anderson, O. (2008). Progress Reports for MFish Project ENV2008-01: Fish and invertebrate bycatch and discards in southern blue whiting fisheries, 2002–2007
MFish interview
Clement and Associates Ltd (2009). Mitigating seabird interactions with trawl nets. DOC project MIT 2006/02.

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>2.2.2</p>	<p>Management strategy: There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations.</p>	<p>There are <u>measures</u> in place, if necessary, which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.</p> <p>The measures are considered <u>likely</u> to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a <u>partial strategy</u> in place, if necessary, for managing bycatch that is expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.</p> <p>There is <u>some objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or the species involved.</p> <p>There is <u>some evidence</u> that the partial strategy is being implemented successfully.</p> <p>There is a <u>strategy</u> in place for managing and minimising bycatch.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports <u>high confidence</u> that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.</p>

Scoring Comments: All stocks
<p>There is a partial strategy in place, if necessary, for managing bycatch that is expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.</p> <p>Species outside the QMS system tend to be considered as low risk of unsustainability. As a result, substantial catches of non-QMS species tends to lead to the establishment of their QMS status. This represents a strategy, described within the QMS introduction standard. If bycatch species consistently reached ‘main’ levels (>5% of the catch), it would likely (but not always) move into the QMS system. A further route to QMS introduction is through the framework of continual monitoring of bycatch catches through the observer programme, and the noting of species catches within vessel logbooks if they represent the top five species caught in a fishing event, and data from catch landing returns, where the weight of <u>all</u> species taken during the trip are reported, provides a basis for simple assessments of the impact of the fishery on these species or species groups, although issues with recording small proportions of bycatch species within logbooks have been noted. Where the level of non-QMS catches is of concern, further research is undertaken, and consideration of the level of risk to the species (and the precautionary approach) are used as a basis for formalisation of that species within the QMS system (see the requirements of the QMS Introduction Standard). A further strategy is the operational fishing approach for whiting, which results in a relatively 'clean' catch. Furthermore, a level 1 risk assessment for non-QMS species is scheduled for completion in 2011-12. Based on the formalised QMS introductions standard and associated monitoring framework, which represents a strategy rather than a partial strategy. A score of 100 is given.</p> <p>There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or the species involved.</p> <p>The QMS introduction standard and accompanying framework is based on information directly from the fishery. As species have moved from bycatch to QMS status within the fishery, they have been subject to more formalised monitoring and must be retained on board vessels or weights estimated. As noted in 2.1.2, the TACCs for the main retained species are adjusted based upon analytical stock assessments. While there is therefore confidence that the QMS introduction standard strategy will work, there is no objective basis for confidence that the TACCs for <u>all</u> minor QMS species are set within biologically-based limits. Not all elements of SG100 are therefore met, and a score of 80 is given. Action on the basis of the risk assessment due for</p>

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completion in 2012 may increase this score.

There is some evidence that the partial strategy is being implemented successfully.

Over time, an increasing number of species have been added to the QMS system and more species have become the subject of analytical assessments. Furthermore, TACCs have clearly been used to limit the catches of some species – mainly the target species – demonstrating that they can be effective and should achieve the objectives of the QMS introduction standard. Furthermore, the operational strategy which results in minimal bycatch in this fishery is noted. There is therefore clear evidence that the strategy is being implemented successfully, and intended changes are occurring. A score of 100 is therefore given.

Score: 90

The formalised framework of data collection and management that underpins the QMS introduction standard, and the resulting movement of key species within the QMS framework, which requires more formalised data collection and consideration of catch levels, represents a strategy. Evidence suggests this approach has been relatively successful, although as already noted the fully objective basis for setting TACC levels for minor QMS species is not transparent. However, bycatch levels within the southern blue whiting fishery are very low, and for this reason a score of 90 is given (two elements score 100, one element scores 80). Further implementation of actions arising from the ERA process due for completion in 2012 may increase the score.

Audit Trace References

- MFish interview
- DOC interview
- Anderson, O. (2008). Progress Reports for MFish Project ENV2008-01: Fish and invertebrate bycatch and discards in southern blue whiting fisheries, 2002–2007
- Ministry of Fisheries (2008)
- Fisheries Act (1996)

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>2.2.3</p> <p>Information / monitoring Information on the nature and amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch.</p>	<p><u>Qualitative information</u> is available on the amount of main bycatch species affected by the fishery.</p> <p>Information is <u>adequate</u> to <u>broadly understand</u> outcome status with respect to biologically based limits.</p> <p>Information is adequate to support <u>measures</u> to manage bycatch.</p>	<p><u>Qualitative information and some quantitative information are</u> available on the amount of main bycatch species affected by the fishery.</p> <p>Information is sufficient to estimate outcome status with respect to biologically based limits.</p> <p>Information is adequate to support a <u>partial strategy</u> to manage main bycatch species.</p> <p>Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).</p>	<p><u>Accurate and verifiable information</u> is available on the amount of all bycatch and the consequences for the status of affected populations.</p> <p>Information is <u>sufficient</u> to quantitatively estimate outcome status with respect to biologically based limits with a <u>high degree of certainty</u>.</p> <p>Information is adequate to support a <u>comprehensive strategy</u> to manage bycatch, and evaluate with a high degree of certainty whether a strategy is achieving its objective.</p> <p>Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.</p>

Scoring Comments: All stocks
<p>Qualitative information and some quantitative information are available on the amount of main bycatch species affected by the fishery. Accurate and verifiable information is available on the amount of bycatch for a proportion of the fleet through the observer programme. This programme covers a reasonable percentage of the fishing fleet. The fishery-independent acoustic and trawl surveys carried out within the area also provide quantitative information on the potential abundance of some (but not all) bycatch species. In addition, if non-QMS species were to represent the top 5 species in the commercial catch, they would be noted in vessel logbooks. In turn, data from catch landing returns, where the weight of <u>all</u> species taken during the trip, are reported. However quantitative information on the consequences for the status of affected populations (as required at the 100 level) is not generally available. A score of 80 is therefore given.</p> <p>Information is sufficient to estimate outcome status with respect to biologically based limits. Information from the observer programme, and the fishery-independent surveys, appear sufficient to examine outcome status if biologically based limits were generated for the majority of species. For occasional bycatch species, the variance in information may reduce the ability to estimate outcome status. Therefore there is a need to examine the existing information to verify its adequacy for this purpose. A score of 80 is therefore given.</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Information is adequate to support a partial strategy to manage main bycatch species.
The partial strategy to manage the main bycatch species is adequately supported through the observer, survey and commercial catch data available. The range of data is adequate to support a comprehensive strategy to manage bycatch, and to evaluate with a high degree of certainty whether a strategy is achieving its objective, Further work on the partial strategy could be (although as noted in the other PIs has yet to be) performed using the available data. A score of 100 is therefore given.

Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy)Monitoring of bycatch data is through the observer programme and is of sufficient detail to assess ongoing mortalities. Surveys are also performed on a regular basis, which can monitor key bycatch species where their frequency in the catches is great enough. However, these data are not sufficient to detect ongoing mortalities for *all* bycatch species. A score of 80 is therefore given.

Score: 85

Given the low level of bycatch within the southern blue whiting fishery, the observer coverage and the collection of data through fishery-independent surveys provides a basis to evaluate the level of risk posed by the fishery, although as noted in 2.2.2 this has not been routinely performed and 2.2.2 was scored down as a result. In turn, information may not be sufficient to evaluate risk for *all* bycatch species, reducing the score here, although the relatively clean nature of the fishery is acknowledged.

Audit Trace References

Anon (2008). New Zealand National Plan of Action for the Conservation and Management of Sharks.Bycatch species caught in southern blue whiting trawl target tows
Mfish interview
Anderson, O. (2008). Progress Reports for Mfish Project ENV2008-01: Fish and invertebrate bycatch and discards in southern blue whiting fisheries, 2002–2007

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2.3	Endangered, Threatened and Protected (ETP) species		
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2.3.1	<p>Status: The fishery meets national and international requirements for protection of ETP species.</p> <p>The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species.</p>	<p>Known effects of the fishery are <u>likely</u> to be within limits of national and international requirements for protection of ETP species.</p> <p>Known direct effects are <u>unlikely</u> to create <u>unacceptable impacts</u> to ETP species.</p>	<p>The effects of the fishery are known and are <u>highly likely</u> to be within limits of national and international requirements for protection of ETP species.</p> <p>Direct effects are <u>highly unlikely</u> to create <u>unacceptable impacts</u> to ETP species.</p> <p>Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.</p>	<p>There is a <u>high degree of certainty</u> that the effects of the fishery are within limits of national and international requirements for protection of ETP species.</p> <p>There is a <u>high degree of confidence</u> that there are <u>no significant detrimental effects (direct and indirect)</u> of the fishery on ETP species.</p>
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Scoring Comments

The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species. Protected species within New Zealand law include all marine mammals, all native birds (excluding those managed as game birds, and the black-backed gull), basking sharks, whale sharks, great white sharks, spotted black grouper, the cold water 'black' corals (Order Antipatharia) and the red corals of the genus *Errina* (specifically *Errina novaehelandiae*). From observer records, species from within all these groups have the potential to interact with the fishery.

The national requirements for ETP protection in New Zealand law notes that while interactions are not forbidden (i.e. zero), the law requires interactions to be reported to DOC, and the long-term aim is to minimise mortalities where possible. This approach provides good information on the potential effects of the fishery on ETP species. In 2010, a number of additional marine species were added to Schedule 7A of the act, including a number of corals (black, Gorgonian and stony corals, as well as hydrocorals, aimed at simplifying coral interaction reporting requirements) and sharks and rays (including the basking shark, deepwater nurse shark, whale shark, manta ray). No specific limits on interactions have been set, but activities aimed at minimising interactions are underway, and the Ministry of Fisheries is finalising a new seabird policy to manage incidental interactions between seabirds and fisheries. A score of 80 is given.

Direct effects are highly unlikely to create unacceptable impacts to ETP species. Direct effects are evaluated by relevant ETP group. ETP species identified to be interacting with the fishery, as identified through the observer programme, include birds, sea lions, fur seals and corals.

Birds
The Ministry of Fisheries completed a sea bird risk assessment process in 2011 which assessed the relative risk of fishery units to sea bird species. This study indicated that for those albatross and petrel species likely to interact with this trawl fishery, the potential additional risk represented by the fishery under certification was less than 1%.

Bird interactions appear rare in sub-area 6R, likely due to the low number of trawls performed in these areas. Occasional bird mortalities have been observed in all other areas within the fishery, being mainly of 'other albatross' or 'other birds'.

In 2007/08 in 6B, one Salvin's albatross and one grey petrel were observed caught, while in previous years a single grey petrel was caught. Conservative population estimates are: Salvin's albatross: 31,000 breeding pairs; grey petrels 100,000 breeding pairs (uncertain estimate). Both Salvin's albatross and grey petrels are classed within the 'moderate' risk category. Based upon these population numbers and the catch rate within the southern blue whiting fishery, the effects of the fishery appear highly likely to be within national limits.

In 2007/08, one Campbell albatross was caught, while in previous years a single bird was caught, of a different species in each year. A conservative population estimate for Campbell Albatross is: 21,000 breeding pairs. This species is classed within the 'low' risk category. Based upon these population numbers and the catch rate within the southern blue whiting fishery, and the results of the ERA for sea birds, there appears to be a high degree of confidence that the effects of the fishery are within limits of national and international requirements for sea birds.

Marine mammals

A recent risk-based analysis placed seals and sealions within the higher end of the medium risk category with respect to trawl fisheries (including the squid trawl fishery and across the NZ EEZ).

Fur seals

Total population estimates of fur seals around New Zealand exceed 50,000 adults and are thought to be expanding following cessation of historical direct exploitation. Fur seal captures appear restricted to sub-areas 6B and 6I. Area 6R records show zero interactions back to 2003 (although in 2003/04 no trawls were performed in this area). This is related to the fact that the fishery operates more than 200 nm offshore in this area. There is therefore a high degree of certainty that the effects of the fishery are within limits of national and international requirements.

The Bounty Islands (6B) are thought to be home to the largest fur seal concentration in New Zealand. Counts through land-based and aerial surveys are sporadically available, and suggest an expanding population. These estimates are somewhat out of date, although more recent evaluations suggest the continued expansion of the population. The Campbell Islands (6I) population breeding colonies are limited by the habitat available and presence of New Zealand sea lions. Population estimates are limited to estimates in the 1960s of 2,000 individuals (Sorensen, 1969).

200 trawls were performed in 6B in the 2007/08 southern blue whiting season, of which 49% were observed. The observed catch rate was 17.35 per 100 trawls, i.e. 17 fur seals were observed captured (no model estimates available), and 2008-09 captures were estimated at 40-195 individuals. There were 559 trawls made within 6I (east of Campbell Island) in the 2007/08 season, of which 42% were observed. The observed fur seal capture rate was 3.02 animals per 100 trawls. More recent model estimates of interactions indicate an average 14 captures per annum in 6I.

Overall population growth suggests that mortalities in the southern blue whiting fishery are highly unlikely to directly affect the population, although continued study is warranted. This view is supported by recent DWG analyses which calculated 'trigger limits' for interactions using the potential biological removal approach (Wade 1998). Using the available literature population estimates for 6B and 6I, this estimated trigger limits of 390-588 and 60 individual captures, respectively. Compared to the interaction rates estimated, and given that the SBW fishery is the only fishery to have significant interactions in the Bounty Islands region for example, there is a high degree of confidence that the effects of the fishery are within limits of national and international requirements. These calculations are currently being peer reviewed, while these estimates rely on those values used for fur seal population size.

Sea lions

Records indicate that sea lion interactions only occur with the southern blue whiting fishery in sub-area 6I. All other areas (6B and 6R) show zero interactions and hence there is a high degree of confidence that the effects of the fishery in these areas are within limits of national and international requirements.

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In 2006-07, six sea lion captures were observed in the southern blue whiting fishery east of Campbell Island, continuing a slowly increasing trend of captures within that fishery since 2002, although capture rates per 100 trawls have remained relatively constant since 2005/06. There were 559 trawls made within 6I (east of Campbell Island) in the 2007/08 southern blue whiting season, of which 42% were observed. The observed sea lion capture rate was 2.16 animals per 100 trawls. Model estimates indicated 12 captures for 2007/08 (95% c.i.: 6 to 21). The average annual capture rate is ~ 5 individuals. These incidental captures are primarily of male animals. Campbell Island is considered a separate subpopulation within the draft Population Management Plan (this plan was not pursued further after consultation).

Population estimates in 2006 were 12,000 individuals (95% c.i.: 10,259-13,625) across all areas, based upon pup counts.

Campbell Island (6I) is estimated to contain ~20% of the total breeding population in New Zealand. An estimated 583 pups were born in 2008. Records indicate that pup production may have increased, although direct comparisons are made difficult by variations in the pup production survey methodologies. However, this suggests that the mortalities within the southern blue whiting fishery are highly unlikely to directly affect the local population.

Around 80% of the breeding population occurs in the Auckland Islands (6A), the area that has been subject to very low (or zero) fishing within the southern blue whiting fishery in recent years and where no sea lion mortalities have been observed. It is of concern that this region has shown reduced sea lion pupping in recent years, but given the information available this appears highly unlikely to result directly from the southern blue whiting fishery. However, the inter-relationship between breeding populations at sea is unclear and further study may require action to be taken, given that sea lions may travel up to 175km from the coast to feed, and hence interactions with fisheries in 6I might occur.

Estimates of PBR for the Campbell Island population in the draft Population Management Plan were between 4 and 48, dependent on the value chosen for the sea lion population's maximum annual rate of increase (a PBR value of 8 using the input parameters used to define MALFiRM values in the plan from the PBR calculation, which were not included within the MALFiRM limit for the squid fishery SQU6T). Average annual interactions are below this value, although confidence intervals may be above it. In turn, a lack of recent local population estimates on which to judge interaction rates means that it is highly likely (rather than there being a high degree of uncertainty) that the fishery in 6I is within limits of national and international requirements.

Corals

Observer data shows that cold water corals may occasionally be brought up in trawls in the area under certification, although the frequency is much lower than in fully demersal trawl operations. The process of mapping the distribution of cold water corals within the fished area has been undertaken across the New Zealand EEZ, but has not been completed, but the underlying information collection programmes are underway and initial analyses have been performed. Total coral returns from observers suggest that – across all fisheries observed – 803kg of black coral were returned over the 10 year period 1996-2006 and as noted the interactions in the southern blue whiting fishery are expected to be a small proportion of these. Observer records from the fishery for the period 2006-07 to 2010-11 indicate only 2kg of coral total were observed. Recent analyses of observer records suggested near zero interactions with main coral groups (Tracey et al., 2011; tables 3 and 3.1; 2 tows out of 320 observed with coral catch, 3kg of bubblegum coral 'caught') which supports these observations. While the observer records do not provide complete coverage of the fishery, the infrequent encounters of ETP species in the available data, combined with the fishery footprint and fishing method, suggest that it is highly unlikely that trawls fishing for southern blue whiting will create unacceptable impacts.

Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.

Indirect effects of fishing on birds (e.g. removal of key prey species) are unlikely to occur due to the targeted nature of the fishery and depth of the target species. The sea lion management plan, while noting that the extent of indirect effects of fishing on sea lions is unclear, includes the requirement to explore any perceived indirect effects of fishing and to develop related management outcomes based on research findings. Observations of issues directly linked to the southern blue whiting fishery are not available for either fur seals or sea lions, likely reflecting the near mono-specific nature of the fishery, reducing competition for 'prey' species. Indirect effects of fishing on corals (e.g. silting due to nearby tows) are likely negligible given the generally pelagic nature of the fishing operations.

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Information on interaction rates and populations in regions 6B and 6R with birds, marine mammals and coral provide a high degree of confidence that there are no significant detrimental effects (direct and indirect) of the fishery on ETP species, and hence a score of 100 can be given for this component.

For region 6I, the information available on sea lion interactions, while indicating it is highly likely to create unacceptable direct impacts, is insufficient to provide a high degree of certainty. A score of 80 is therefore given for this and the indirect impacts component.

Score: 80 (6I), 90 (6B, 6R)

Given the available information for the ETP likely to interact with the southern blue whiting fishery, and the geographic area of those interactions, the impact of the fishery on ETP populations is considered to provide a high degree of confidence that there are no significant detrimental effects in regions 6B and 6R, and a combined score of 90 is given for these regions (scores of 80 and 100). Uncertainty over sea lion interactions and population size in region 6I means that while the fishery is highly unlikely to create unacceptable impacts a score higher than 80 cannot be given. Results from empirical analyses could increase this score.

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SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>2.3.2</p> <p>Management strategy The fishery has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> - meet national and international requirements; - ensure the fishery does not pose a risk of serious or irreversible harm to ETP species; - ensure the fishery does not hinder recovery of ETP species; and - minimise mortality of ETP species. 	<p>There are <u>measures</u> in place that minimise mortality, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.</p> <p>The measures are <u>considered likely</u> to work, based on <u>plausible argument</u> (eg general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a <u>strategy</u> in place for managing the fishery’s impact on ETP species, including measures to minimise mortality, that is designed to be highly likely to achieve national and international requirements for the protection of ETP species.</p> <p>There is an <u>objective basis for confidence</u> that the strategy will work, based on <u>some information</u> directly about the fishery and/or the species involved.</p> <p>There is <u>evidence</u> that the strategy is being implemented successfully.</p>	<p>There is a <u>comprehensive strategy</u> in place for managing the fishery’s impact on ETP species, including measures to minimise mortality, that is designed to achieve <u>above</u> national and international requirements for the protection of ETP species.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and a <u>quantitative analysis</u> supports <u>high confidence</u> that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is evidence that the strategy is achieving its objective.</p>

Scoring Comments
<p>There is a strategy in place for managing the fishery’s impact on ETP species, including measures to minimise mortality, that is designed to be highly likely to achieve national and international requirements for the protection of ETP species.</p> <p>Key legislation for ETP species includes the Fisheries Act (1996), Wildlife Act (1953), Marine Mammals Protection Act (1978), and specific regulations for birds (relating to bycatch mitigation approaches). Combined with the requirement to report injury or mortality of protected species to the Department of Conservation (without offence), and the observer programme on board trawler vessels, these provide a strategy to monitor the legislation. National Plans of Action have been developed (but not yet implemented) for birds and sharks. An environmental risk assessment process has been completed, which will support a new seabird policy to management of interactions of fisheries with sea birds.</p> <p>General mitigation approaches for trawlers, supported through legislation, include voluntary industry-led codes of practice. These include individual vessels which each develop a Vessel Management Plan, which includes methodologies to limit offal discharge during periods of vulnerability for birds, and which are audited by MFish observers. This approach allows mitigation methods to be adapted to the particulars of vessel operations, but as a result may be unable to eliminate interactions. In turn, regulations require the use of one of three potential bird scaring devices: paired streamer lines, a bird baffler or warp deflector, which must be deployed as soon as possible after trawl shooting by all vessels 28m or greater in length. These devices have been shown through observer programme data to have successfully reduced mortalities through warp strikes. While mealing of offal has been suggested prior to discharge, the efficacy of this approach is not clear. The cleaning of the net before shooting is also required. Studies on trawl net mitigation processes are underway, and form the basis of industry Operating Procedures, although these are not legislated. Further mitigation methods are being developed to reduce mortalities through trawl net entanglement, which when implemented would improve the score given. Reporting practices are also in place, so that bird captures trigger action by DWG and are reported to MFish. The fact that the fishery operates during the austral winter will further reduce bird interactions.</p> <p>There are no regulations defining mitigation approaches for marine mammal interactions (SLEDs are not required in this fishery), unlike those within the squid fishery. In turn, no fishery-</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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related mortality limit has been developed for the fishery, although the DWG has commissioned research which has identified 'potential biological removal' levels for deepwater fisheries that interact with fur seals. The New Zealand sea lion species management plan and recovery plan, mainly focused on the squid fishery, describes some protection, prohibiting fishing within 12nm of the Auckland Islands through the establishment of the marine mammal sanctuary. The population model used to set a fishing related mortality limit (FRML) for squid in the Auckland Islands squid fishery takes into account sea lion mortalities from other fisheries including SBW. This information then influences the FRML that is set for SQU6T. In turn, the industry has developed operating procedures to identify and react to marine mammal bycatch events. Rapid reporting practices are in place, so that marine mammal captures trigger action by DWG and are reported to MFish. In turn, operating procedures are also provided to minimise the danger period when the trawl net is close to the surface, shallow turns while trawling, and to avoid discharging offal (as in the VMP for bird bycatch mitigation). Some vessels avoid shooting nets where marine mammals are present. Estimates of PBR for the Campbell Island population in the draft Population Management Plan were between 4 and 48, dependent on the value chosen for the sea lion population's maximum annual rate of increase (a value of 12 using the input parameters used to define MALFiRM values in the plan from the PBR calculation). Average annual interactions are below this value, although on the basis of the confidence intervals there is a potential for interactions to be above it. The sea lion Population Management Plan has not proceeded further, following consideration by DOC of all comments from stakeholders, and hence the PBRs are not in place for 6I. It is also noted that those preliminary PBR estimates were developed in 2007, and further information may be available to improve those estimates.

It is noted that available information suggests that critical interactions between the squid fishery operating adjacent to the Auckland Islands and Campbell Island sealion populations are considered minimal. Most of the sea lion interactions in the SBW6I fishery are male. Available information shows no evidence of female sea lions foraging/moving between Auckland Islands and Campbell Island. This suggests that the two are separate "populations". Given knowledge of their movements, biology and distances between breeding sites, DOC treats sea lions from Auckland Islands and Campbell Island as separate sub-populations (or rookeries) for the purposes of assessing any effects if fisheries interactions.

With respect to protected cold water corals, the pelagic trawls of the southern blue whiting fleet are unrestricted by the designation of Benthic Protection Areas. The main mitigation strategy is an operational one – the generally pelagic nature of the trawl, although it is known that these trawls can interact with the seabed as noted by observers. These interactions are considered minimal when compared with demersal trawling.

In 2010, a number of additional marine species were added to Schedule 7A of the act, including a number of corals (black, Gorgonian and stony corals, as well as hydrocorals) and sharks and rays (including the basking shark, deepwater nurse shark, whale shark, manta ray). This changed helped to simplify interaction reporting requirements for corals in particular.

In turn, the Ministry of Fisheries is currently implementing an increase to full observer coverage across all deepwater fisheries, which will improve information to support management measures (see 2.3.3).

A score of 80 is given for areas 6B and 6R, while a score of 60 is given for 6I, due to the uncertainty over the potential impact of the fishery on the sea lion population, noting that measures are expected to be highly likely to achieve national and international requirements for the protection of ETP species

There is an objective basis for confidence that the strategy will work, based on some information directly about the fishery and/or the species involved.

There is a clear intention that mitigation strategies aim to conserve the populations of ETP species. While mitigation methods appear to be effective at delivering reduced impacts, there is no objective basis for confidence that these strategies will achieve the intention of the management strategy, for which the legislation states that fisheries will have no adverse effects on ETP species. A score of 80 is given.

There is evidence that the strategy is being implemented successfully.

For birds and marine mammals, observer monitoring of the implementation of approaches on vessels (although it should be noted that observers do not implement the legislation; other branches of MFish would follow up on identified breaches, as necessary), and the enforcement of regulations, provides evidence that the strategy is being implemented successfully. A score of 80 is

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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given.

Score: 75 (6I), 80 (6B, 6R)

While operational strategies appear effective at reducing seabird and coral interactions and most marine mammals in areas 6B and 6R, they appear less effective for sea lions in 6I in particular. While the fishery impact appears highly unlikely to create unacceptable impacts on the sea lion populations in this region (2.2.1), there is no formal mitigation strategy to ensure this remains so, and which will provide an objective basis for confidence that the operational strategies will work. However, implementation of increased observer coverage underpins the development of such a framework, and will provide more precise information on interaction rates. Further implementation of actions arising from the NPOA processes due for completion in 2012 will be monitored during the annual audit process.

Condition 1 has been generated for this performance indicator for region 6I specifically.

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 Interview with MFish
 Interview with DWG
 Interviews with Forest and Bird, WWF, Greenpeace, Eco

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>2.3.3</p> <p>Information / monitoring Relevant information is collected to support the management of fishery impacts on ETP species, including:</p> <ul style="list-style-type: none"> - information for the development of the management strategy; - information to assess the effectiveness of the management strategy; and - information to determine the outcome status of ETP species. 	<p>Information is <u>adequate</u> to <u>broadly understand</u> the impact of the fishery on ETP species.</p> <p>Information is adequate to support <u>measures</u> to manage the impacts on ETP species</p> <p><u>Information</u> is sufficient to <u>qualitatively</u> estimate the fishery related mortality of ETP species.</p>	<p>Information is <u>sufficient</u> to determine whether the fishery may be a threat to protection and recovery of the ETP species, and if so, to measure trends and support a <u>full strategy</u> to manage impacts.</p> <p><u>Sufficient data</u> are available to allow fishery related mortality and the impact of fishing to be <u>quantitatively</u> estimated for ETP species.</p>	<p>Information is <u>sufficient</u> to <u>quantitatively</u> estimate outcome status with a high degree of certainty.</p> <p>Information is adequate to support a <u>comprehensive strategy</u> to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.</p> <p><u>Accurate and verifiable information</u> is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species</p>

Scoring Comments: All stocks
<p>Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species, and if so, to measure trends and support a full strategy to manage impacts.</p> <p>The Marine Conservation Services programme aims to monitor the effects of commercial fishing on protected species. Monitoring seabird mortality within the fishery is a specific role of the observer on board vessels. The coverage of observers has been sufficient to develop reasonable estimates of the likely total mortality of seabirds in each fishery and area, and to monitor trends in the mortalities over time, including the impacts of bird mortality mitigation approaches discussed under 2.3.2. Surveys of bird populations are underway, and estimates of breeding population size are available which allow quantitative estimates of outcome status. However, there remain difficulties in assessing non-warp strike bird mortalities such as those related to net entanglements.</p> <p>Monitoring of marine mammal mortalities within the fishery is also a specific role of the observer on board vessels. The coverage of observers has been sufficient to develop reasonable estimates of the likely total mortality of marine mammals by area, and to monitor trends in the mortalities over time. Studies of both fur seal and sea lion breeding populations have been undertaken, with monitoring being performed at irregular intervals. The most recent survey on Campbell Island was completed by DOC in 2010, and the results are being developed. While these studies allow some quantitative judgement of the likely impact of the fishery, they are not yet able to definitively indicate abundance levels and trends in all areas to enable the status to be identified with a high level of certainty.</p> <p>Cold water corals captured in trawls are noted by observers present onboard, and where they cannot be identified are returned to NIWA for more detailed examination under DOC funded projects. Fishery-independent surveys are also underway using cameras inside and outside the main fishery areas. These surveys are also monitoring the recovery of corals within newly closed areas of the New Zealand EEZ. Further projects are examining other biological aspects of cold water corals. Although the work has not yet been completed, when combined this data would allow the overlap of fishing vessel operations (where interactions of the trawl gear with the seabed are specifically noted) with the distribution of protected cold water corals to be identified, and</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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judgements made on the potential degree of impacts in a quantitative manner. A score of 100 is therefore given.

The addition of new species to the Fisheries Act in 2010 requires captures of specific sharks and corals in general to be reported specifically, using a standardised form that is administered by the Ministry of Fisheries. This provides a consistent reporting framework and effective data collection and collation.

Sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.

As noted, information from the observer programme is adequate to support the strategy of bird mitigation to manage impacts, and data have shown decreases in bycatch following the introduction of mitigation methods, allowing the impact to be identified with a reasonably high degree of certainty. This programme also provides information on the interactions between gears and sea mammals, and enables the effectiveness of any mitigation approaches to be evaluated. In turn, observers in monitoring interactions with ETP species also monitor their fate (including recovering and returning dead specimens for identification and autopsy). Information from the observer programme, combined with the fishery-independent underwater surveys, would therefore support a comprehensive strategy to manage impacts and evaluate their effectiveness. In turn, the Ministry of Fisheries is currently implementing an increase to full observer coverage across all deepwater fisheries, which will improve information to support management measures.

The observer programme provides coverage for a reasonable percentage of fishing events. However, interactions cannot be monitored continuously given the other duties required of the observers. The Ministry of Fisheries is currently implementing an increase to full observer coverage across all deepwater fisheries, which will improve information to support management measures and may lead to a higher score. A score of 80 is therefore given for this combined SG element.

Score: 90

Quantitative information through the observer programme and through population surveys is being developed for the main ETP species, which allow judgements to be made on the effectiveness of existing strategies to mitigate interactions. Further development of time series of information and hence increased certainty in estimates would improve the score further.

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MFish interview

DOC interview

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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NIWA interview Interviews with Forest and Bird, WWF, Greenpeace, Eco http://www.beehive.govt.nz/release/protection-status-changes-wildlife-act
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SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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2.4	Habitat		
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2.4.1	<i>Status</i> The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function.	The fishery is <u>unlikely</u> to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery is <u>highly unlikely</u> to reduce habitat structure and function to a point where there would be serious or irreversible harm.	There is <u>evidence</u> that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
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Scoring Comments: All stocks

The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
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The semi-pelagic nature of the southern blue whiting trawl fishery reduces the impact on the demersal habitat, but does not eliminate it; observations show that the gear may occasionally interact with the seabed generally on setting and hauling. Compared to a fully demersal trawl gear, the footprint of the gear will be much reduced. Impacts will be limited to the main fishing areas, reducing further the footprint of the fishery relative to the total EEZ. The observer coverage indicates that over the period from 2000-2008, 2 tonnes or less of individual demersal invertebrate groups have been identified in the catch. Recent analyses examined the proportion of the EEZ and territorial waters trawled by SBW fisheries. This analysis used TCEPR start and end of trawl data and door-to-door swept areas. The estimated area trawled amounted to 0.43% of the EEZ and territorial waters, and 4.25% of the full southern blue whiting habitat range (6.9% of the key 90% of this range). It is noted that a high proportion of this area will likely not be impacted at all, given the semi-pelagic nature of the gear, although the analysis report notes that the figures estimated are likely to be underestimates, mitigating this somewhat. This, combined with the method of fishing, provides evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. This could be further improved through incorporation of available VMS information. Based on these analyses, there is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. A score of 100 is therefore given. It is noted that as part of the 10 year Research Programme, the trawl grounds of the SBW fisheries will be mapped and audited annually (see 2.4.2), and further calculations of the potential swept area by BOMECA habitat classes will be monitored during the annual audit process.

Score: 100

The semi-pelagic nature of the fishery, and reduced footprint relative to the New Zealand EEZ and habitats, combined with the empirical evidence from recent analyses, makes it highly unlikely to reduce habitat structure and function to the point where there would be serious or irreversible harm.

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<http://www.nabis.govt.nz/Pages/WhatNabisCanDo.aspx>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>2.4.2</p>	<p>Management strategy There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types.</p>	<p>There are <u>measures</u> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.</p> <p>The measures are considered <u>likely</u> to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).</p>	<p>There is a <u>partial strategy</u> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.</p> <p>There is some <u>objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or habitats involved.</p> <p>There is <u>some evidence</u> that the partial strategy is being implemented successfully.</p>

There is a strategy in place for managing the impact of the fishery on habitat types.

The strategy is mainly based on information directly about the fishery and/or habitats involved, and testing supports high confidence that the strategy will work.

There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.

Scoring Comments: All stocks
<p>There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.</p> <p>The New Zealand Biodiversity Strategy (2000) identified the need to develop a Marine Protected Areas Policy to protect a full range of natural marine habitats and ecosystems to effectively conserve marine biodiversity, using a range of appropriate mechanisms, including legal protection. The MFish Strategy for Management of the Environmental Effects of Fishing (SMEEF, 2005) provides a further framework for managing impacts, aiming to implement an Ecosystem Approach to Fisheries, make significant improvements in managing the environmental effects of fishing, and to ensure that the Ministry of Fisheries (MFish) meets its environmental obligations under the Fisheries Act 1996 and other legislation in an efficient and consistent manner. These provide an overall framework for necessary protection of the sea bed. The recent development of the Benthic Optimised Marine Environmental Classification (BOMECE) approach by the Ministry of Fisheries provides a further framework for judging fishery impacts on habitats. In turn, analyses of fishery/coral interactions (see 2.3) form part of the strategic framework for fishery/habitat interaction management. Furthermore, the National Deepwater Plan contains fishery-specific objectives that include annual monitoring of the trawl footprint and assessment to ensure that the fishery is not having an adverse effect on benthic habitat (judged against the BOMECE classes). The first of these audits has recently been completed.</p> <p>Fishery specific operational procedures provide a partial strategy to limit habitat impacts; the semi-pelagic nature of the gear, and the tendency to localise trawl footprints to particular areas, limits the impact of the fishery. Only 9% of the trawl events in FMA6 were by the southern blue whiting fishery, representing ~ 5% of the swept area covered, apparently assuming that the <i>total</i> trawl event was on the seabed, and hence representing a potentially significant overestimate. The operational approach represents a partial strategy, as the analysis of the extent of the types of habitat encountered by the gear has not been completed at this time.</p> <p>Southern blue whiting trawls are not excluded from the Benthic Protection Areas. However, trawls must be conducted in the presence of an observer and there is a requirement to use an electronic net monitoring equipment to ensure the trawl gear does not go within 100m of the seabed to avoid the risk of bottom contact and modification of benthic communities within BPAs. The industry is developing a mid-water trawling protocol for the use of this gear within BPAs, aimed at ensuring that trawl gear does not impact on the benthic environment. These suggest the establishment of a buffer zone in every BPA, of 50m and 100m above the seabed, with differential penalties for breaching these zones.</p> <p>The approach in place represents a considered strategy developed to monitor, and where necessary limit fishery/habitat interactions. A score of 100 is therefore given for this element.</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or habitats involved.
 The observer programme provides information on the relatively low level of demersal invertebrate bycatch brought up in the trawls. Furthermore, the planned annual analysis of SBW trawl footprints will provide regular audits of impacts relative to the newly defined BOMECE areas. The impact of introducing Benthic Protection Areas on seamounts has been monitored, and evidence of slow recovery in coral cover has been seen (where extant corals in neighbouring areas may allow better re-recruitment). Given the fact that the annual audits have only just begun, a score of 80 is given for this element, since it cannot be said that the approach has been fully tested (as required at the SG100 level). Effective implementation of the mid-water trawling protocol within BPAs (verified by observers) and further information from the recently initiated annual audits may lead to a higher score.

There is some evidence that the partial strategy is being implemented successfully.
 The partial strategy of operational practices has been shown to be implemented successfully through the observer coverage on board vessels fishing for southern blue whiting, and through the recent initial audit of SBW trawl/BOMECE interactions. A score of 80 is therefore given for this element. Further information from the annual audits should provide clear evidence that the strategy is being successfully implemented, leading to a higher score for this element.

Score: 85

The National Deepwater Plan, and Ministry developed BOMECE framework, along with the operational strategy of the semi-pelagic SBW trawl provides a strategy to minimise habitat impacts. The first annual audit of impacts has been performed, and further years of information will support the view that the strategy is tested and performing well. One element scores 100, and two 80, leading to an overall score of 85.

Audit Trace References

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SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>2.4.3</p>	<p>Information / monitoring Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types.</p>	<p>There is a basic understanding of the types and distribution of main habitats in the area of the fishery.</p> <p>Information is adequate to broadly understand the main impacts of gear use on the main habitats, including spatial extent of interaction.</p>	<p>The nature, distribution and vulnerability of all main habitat types in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery.</p> <p>Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent, timing and location of use of the fishing gear.</p> <p>Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).</p> <p>The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.</p> <p>Changes in habitat distributions over time are measured.</p> <p>The physical impacts of the gear on the habitat types have been quantified fully.</p>

Scoring Comments: All stocks
<p>The nature, distribution and vulnerability of all main habitat types in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery. Oceanography and primary productivity has been well studied through projects and remote sensing studies. Fairly comprehensive benthic surveys have been performed of seabed types around the New Zealand continental shelf and seamounts. Analyses have developed a Marine Environmental Classification (MEC) and sediment distributions in the New Zealand EEZ using categorical definitions, along with the Interim Nearshore Marine Classification (INMARC) developed by DOC. Further projects mapping the biodiversity of seabeds and the spatial and temporal extent of fishing are underway through NIWA. These include the Ocean Survey 20/20 (OS 20/20) project which aims to map seafloor habitats and biodiversity of New Zealand’s marine environment across large areas of the EEZ, although concentrating on the Chatham Rise and Challenger Plateau, and ongoing studies to expand knowledge of the distribution of cold water corals. The location of key vulnerable habitat types (smokers, hydrothermal vents etc) is known. In turn, the demersal footprint of the fishery is well established through VMS records and the TCEPR data, while interactions with the seabed are noted for at least that proportion of the fleet carrying observers. The Ministry of Fisheries recently collated all available information to develop the Benthic Optimised Marine Environmental Classification (BOMECE) which provides a comprehensive map of habitat types and their key characteristics across the New Zealand EEZ (including territorial waters). A score of 100 is given for this element.</p> <p>Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent, timing and location of use of the fishing gear. Data from surveys, logbooks and the observer programme are available to allow the impacts of the fishery on habitat types to be identified. The VMS provides reliable information on the spatial extent, timing and location of use of the fishing gear. The ERA performed in 2002 described and reviewed the main elements of the ecosystem within the fishery footprint, providing a broadly qualitative assessment of the main areas of potential impact sensitive to recovery times. The changes within previously fished habitats inside BPAs over time have been examined, particularly</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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on seamounts. However, that on the main fished area has not been examined, and is inferred from literature on other fisheries. The observer programme notes benthic invertebrates brought up in the trawl, although the taxonomic resolution of these groups has limited detail. Taxonomic guides developed by NIWA for cold water corals and sponges are improving this, while still unidentified corals are returned to land for professional taxonomic identification. The BOMECE habitat distribution, trawl-by-trawl data and observer records have been used to assess the potential impact of SBW trawling on habitats (see 2.4.1 and 2.4.2) and examine interactions with vulnerable coral species (see 2.3). While the BOMECE process has updated the previous view of habitat structure in the New Zealand EEZ, it cannot be said that changes in habitat distributions over time have been measured, as required by the SG100. Therefore a score of 80 is given for this element.

Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).

Recent analyses have used the existing data to quantify the physical impacts of the SBW trawl gear against the BOMECE habitat types, and this mapping will occur at an annual frequency. In turn, interactions of this fishery with corals have been evaluated (see 2.3) The continuation of this programme, the observer programme, logbook records, VMS and surveys, provides sufficient data to detect any increase in risk to habitat, and allow the physical impacts of the gear on the habitat types to be quantified fully. A score of 100 is therefore given for this element.

Score: 90

The distribution of demersal habitats is reasonably well understood through a range of studies, and have recently been formalised in the BOMECE framework. Sufficient data exist and have allowed the interactions of the fishery with habitats to be identified. These data continue to be collected and allow increased risk to be identified. Two elements score 100, and one 80, hence an overall score of 90 is given.

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SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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2.5	Ecosystem		
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2.5.1	<p><i>Status</i> The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function.</p>	<p>The fishery is <u>unlikely</u> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.</p>	<p>The fishery is <u>highly unlikely</u> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.</p>	<p>There is <u>evidence</u> that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.</p>
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Scoring Comments: All stocks

The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.

The relatively clean nature of the fishery means that, based upon logical argument and the known position of the species within the ecosystem in the areas under certification, the extraction of southern blue whiting from the ecosystem through the fishery at current levels is highly unlikely to disrupt key elements of underlying ecosystem structure and function. The ecopath model developed for the sub-Antarctic region of New Zealand includes southern blue whiting, but has not yet been specifically used to assess whether fishery removals at current levels may impact upon the modelled ecosystems.

This trophic model of the Southern Plateau ecosystem, where hoki form a large part of the fish component, suggests the area has low productivity and energy transfer between components is efficient. Southern blue whiting stocks have been maintained at, or above, B_{MSY} with high probability (see also stock summary at <http://fs.fish.govt.nz/Page.aspx?pk=16&tk=478>). At these levels, there would be a sizeable proportion of biomass remaining in the ecosystem, and removals at this level are unlikely to lead to serious harm.

Further analyses have been performed to examine New Zealand's deepwater fisheries using an energetics approach, which is currently under peer review. This estimates the fraction of net primary production required to support the deepwater fisheries harvest. Dependent upon the indicator framework used, the deepwater fisheries as a whole (rather than SBW alone) would be rated as >70% or >50% to be sustainably fished. This research is yet to be peer reviewed, and does not identify a breakdown for the SBW fishery specifically. The authors of the report note that while deepwater fisheries appear sustainable, appropriating 4-5% of the carbon produced annually in recent years, this reflects somewhat the 'fishing down the foodweb' that will occur due to the removal of top predator fish species, and that deepwater fisheries contribute to the cumulative energetic pressures on the wider ecosystem from all fisheries, which require an estimated 12% of the carbon produced annually. To identify the potential disruption in the key elements underlying ecosystem structure and function, a food web analysis would be required, as noted by the authors. However, the energetics analysis does strongly support the opinion that the fishery is highly unlikely to disrupt the ecosystem structure and function. A score of 80 is given.

Score: 80

Current catch levels will leave a sizeable biomass within the oceans. Given the clean nature of the fishery and the level of primary production estimated to be appropriated, it is highly unlikely to disrupt key elements of the ecosystem. To attain a score higher than 80, further examination using the developed ecosystem model would be required.

Audit Trace References

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SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>2.5.2</p>	<p>Management strategy There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function.</p>	<p>There are <u>measures</u> in place, if necessary, that take into account potential impacts of the fishery on key elements of the ecosystem.</p> <p>The measures are considered likely to work, based on <u>plausible argument</u> (eg, general experience, theory or comparison with similar fisheries/ ecosystems).</p>	<p>There is a <u>partial strategy</u> in place, if necessary, that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.</p> <p>The partial strategy is considered likely to work, based on <u>plausible argument</u> (eg, general experience, theory or comparison with similar fisheries/ ecosystems).</p> <p>There is <u>some evidence</u> that the measures comprising the partial strategy are being implemented successfully.</p>
<p>There is a <u>strategy</u> that consists of a <u>plan</u>, containing measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and the Components and elements of the ecosystem.</p> <p>This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.</p> <p>The measures are considered likely to work based on <u>prior experience</u>, plausible argument or <u>information</u> directly from the fishery/ecosystems involved.</p> <p>There is <u>evidence</u> that the measures are being implemented successfully.</p>			

Scoring Comments: All stocks
<p>There is a partial strategy in place, if necessary, that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.</p> <p>The partial strategy in place is represented by the TACCs in operation within the fishery for all the QMS species. This takes into account available information collected through the logbook system, observer programme and fishery-independent surveys. The clean nature of the fishery will also reduce ecosystem effects. This is expected to restrain impacts of the fishery on the ecosystem, however a formalised plan specifically considering ecosystem interactions for all species has not been developed. A score of 80 is given.</p> <p>The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems).</p> <p>The clean nature of the fishery, as noted through the observer programme, reduces the impacts to extractions of southern blue whiting. This species is not at a low trophic level, and is current being fished around, or below, B_{MSY} levels, as per the Act. Plausible argument based upon the statement that the management strategy will be cautious implies that if the strategy can be implemented effectively, the requirements of this PI will be met. A score of 80 is given.</p> <p>There is some evidence that the measures comprising the partial strategy are being implemented successfully.</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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TACCs are being monitored and for southern blue whiting adjusted where necessary to achieve current sustainable stock sizes. Given the clean nature of the fishery, this will limit ecosystem effects. Demersal impacts will be reduced by the semi-pelagic nature of the fishery. While not excluded from fishing in BPAs as a result of this fishing method, activities are monitored through observer and VMS coverage, and as part of the partial management strategy the BPAs should provide some ecosystem buffering, with monitoring of the operational strategy of fishing. The measures are therefore considered likely to work, as demonstrated by the maintenance of ecosystem structure and function through appropriately limited fishing levels around the world, and from the ongoing information collected directly from the fishery/ecosystems involved through fishery-independent surveys and observers. A score of 100 is given for this element.

There is also evidence that the partial strategy based on the QMS framework and operational approach, monitored through logbooks, observers and VMS, that the measures are being implemented successfully. A score of 100 is given for this element.

Score: 90

The partial strategy forms part of the overall fisheries plan where extractions are targeted at B_{MSY} (or greater). Given the relatively clean nature of the fishery, this provides a partial plan for ecosystem maintenance, and evidence is available directly from the fishery through the fisheries management and monitoring process.

Audit Trace References

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SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>2.5.3</p>	<p>Information / monitoring There is adequate knowledge of the impacts of the fishery on the ecosystem.</p>	<p>Information is adequate to <u>identify</u> the key elements of the ecosystem (e.g. trophic structure and function, community composition, productivity pattern and biodiversity).</p> <p>Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but <u>have not been investigated in detail</u>.</p>	<p>Information is adequate to <u>broadly understand the functions</u> of the key elements of the ecosystem.</p> <p>The main functions of the Components (i.e. target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are <u>known</u>.</p> <p>Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.</p> <p>Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).</p>

Scoring Comments; All stocks
<p>Information is adequate to broadly understand the functions of the key elements of the ecosystem Stomach content analysis projects have been performed which underpin the ecopath model developed for the Southern Plateau. These include the species that prey on juvenile and adult southern blue whiting. Given the different ecosystems covered by existing models and studies, information is adequate to broadly understand the functions of the key elements of the ecosystem.</p> <p>The main impacts of the fishery on the ecosystem elements can be inferred from the stock assessments (for key species), QMS catch trends, and surveys which cover the target, related species, and most levels of the ecosystems. The existing model has not been used to investigate the impacts of the fishery on the ecosystem or feed into the fishery management process, and hence the main interactions have not been fully investigated. A score of 80 is given.</p> <p>The main functions of the Components (i.e. target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known. The main functions of the components of the ecosystem have been identified through the ecosystem sampling programme undertaken to parameterise the ecosystem model for the Southern Plateau region of New Zealand. This model includes both the prey and predators of southern blue whiting, including birds and seals. A score of 80 is given.</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.
Information from the observer programme, and the logbooks (for the main 5 species in the catch) allow the major consequences for the ecosystem to be inferred. The developed Ecopath model allows the impacts of the fishery on components to be examined, although this analysis has not yet been performed. A score of 80 is given.

Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).
The observer programme and fishery-independent trawl surveys, which collect both abundance and biological information amongst others, and logbook data on resource extraction levels, continue to be collected. The ERA process that is underway should cover those species of particular importance to the ecosystem. These allow changes in risk levels to be identified. The continued collection of biological and catch data also represent information sufficient to support the development of strategies to manage ecosystem impacts, although as noted those strategies have not yet been initiated. A score of 100 is therefore given.

Score: 85

The ongoing data collection and monitoring process, which underpins the developed ecopath model, demonstrates an understanding of the Southern Plateau ecosystem and its elements and interactions. The continued collection of data allows risk levels to be monitored.

Audit Trace References

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SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Principle 3	The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable
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3.1	Governance and Policy
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3.1.1	<p>Legal and/or customary framework The management system exists within an appropriate and effective legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> - Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; - Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and - Incorporates an appropriate dispute resolution framework. 	<p>The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.</p> <p>The management system incorporates or is subject by law to a <u>mechanism</u> for the resolution of legal disputes arising within the system.</p> <p>Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.</p> <p>The management system has a mechanism to <u>generally respect</u> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>	<p>The management system incorporates or is subject by law to a <u>transparent mechanism</u> for the resolution of legal disputes which is <u>considered to be effective</u> in dealing with most issues and that is appropriate to the context of the fishery.</p> <p>The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges.</p> <p>The management system has a mechanism to <u>observe</u> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>	<p>The management system incorporates or is subject by law to a <u>transparent mechanism</u> for the resolution of legal disputes that is appropriate to the context of the fishery and has been <u>tested and proven to be effective</u>.</p> <p>The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges.</p> <p>The management system has a mechanism to <u>formally commit</u> to the legal rights created explicitly or established by custom on people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>
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Scoring Comments			
The management system is consistent with appropriate local, national and international legislation that are aimed at achieving sustainable fisheries in accordance with Principles 1 and 2. New			

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Zealand is signatory to several international agreements that apply to this fishery (Convention on Biodiversity, UNCLOS, MARPOL, CITES etc.) These agreements are implemented in the management of the New Zealand deepwater fisheries, and are complied with by DWG member Companies. There is a thorough briefing document for skippers used by the various DWG's member companies that focus in part on fisheries law. Requirements resulting from international conventions and agreements are reflected in this document. The Ministry operates within the framework of a range of laws, most notably the Fisheries Act 1996. The purpose of this Act is to provide for utilization of fisheries resources, while ensuring sustainability. The Ministry is also responsible for the administration of the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992, which implements the 1992 Fisheries Deed of Settlement under which all historic Treaty of Waitangi claims relating to commercial fisheries have been fully and finally settled and the Maori Fisheries Act 2004, which provides that the Crown allocates to the Treaty Of Waitangi Fisheries commission 20% of quota for any new quota management stocks brought into the QMS. The management system has a mechanism for the timely resolution of disputes that is open to all stakeholders.

There are procedures and processes under Part 7 of the Fisheries Act that apply to disputes about the effects of fishing on the fishing activities of any person that has a current fishing interest provided for under the Act. It provides opportunities to negotiate and resolve disputes. The Minister may appoint a Dispute's Commissioner and the Minister makes the final determination. However it does not seem to be widely used. Rather the consultation process is an attempt to avoid unresolved dispute by ensuring all interested parties have an opportunity to participate and have an input into decisions There have been occasions where there has not been a satisfactory outcome and then this has gone to litigation where the Court has made a decision. The Memorandum of Understandings between the Deepwater Group Ltd and the Ministry of Fisheries should encourage better working relationships and avoid the need for litigation between the Ministry and industry.

Score: 95

The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2. The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective. The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges.

The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom on people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.

All elements meet 80 and three of the 100, giving it a score of 95

Audit Trace References

- Fisheries Act 1996 and various regulations
- International Conventions and Agreements that NZ is a signatory to- including binding agreements, environmental agreements, regional agreements and non binding agreements
- 1992 Fisheries Deed of Settlement
- Maori Fisheries Act 2004
- Memorandum of Understanding for the Deepwater Fisheries Management Partnership between DWG and MFish May 2008
- The Ministry of Fisheries Research Planning and Implementation Cycle

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>3.1.2 Consultation, roles and responsibilities The management system has effective consultation processes that are open to interested and affected parties.</p> <p>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties.</p>	<p>Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>generally understood</u>.</p> <p>The management system includes consultation processes that <u>obtain relevant information</u> from the main affected parties, including local knowledge, to inform the management system.</p>	<p>Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>explicitly defined and well understood</u> for <u>key areas</u> of responsibility and interaction.</p> <p>The management system includes consultation processes that <u>regularly seek and accept</u> relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.</p> <p>The consultation process <u>provides opportunity</u> for all interested and affected parties to be involved.</p>	<p>Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>explicitly defined and well understood</u> for <u>all areas</u> of responsibility and interaction.</p> <p>The management system includes consultation processes that <u>regularly seek and accept</u> relevant information, including local knowledge. The management system demonstrates consideration of the information and <u>explains how it is used or not used</u>.</p> <p>The consultation process <u>provides opportunity and encouragement</u> for all interested and affected parties to be involved, and <u>facilitates</u> their effective engagement.</p>

Scoring Comments
<p>Section 12 of the 1996 Act includes a range of specific consultation requirements.</p> <p>The Minister of Fisheries is required to consult with those classes of persons having an interest (including, but not limited to, Maori, environmental, commercial and recreational interests) in the stock or the effects of fishing on the aquatic environment in the area concerned;</p> <p>Section 12 only relates to certain sections of the 1996 Act. However there are other sections of the 1996 Act that require the Minister or MFish Chief Executive to consult with stakeholders before making a decision.</p> <p>The Ministry of Fisheries has a well defined process for stakeholder consultation</p> <p>The consultation process</p> <ul style="list-style-type: none"> - Sets out best practice process for how MFish will meet its obligations under s 12 of the Fisheries Act 1996 and for other decisions requiring consultation with fisheries stakeholders; - helps to ensure a consistent approach across all MFish business groups when consulting with fisheries stakeholders; and - sets out minimum performance measures where appropriate, e.g., a minimum period for stakeholder consultation. <p>The consultation process standard includes the following –</p> <ul style="list-style-type: none"> • Identification of stakeholders “having an “interest” for consultation purposes, • Time frame for consultation

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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- Notification of decision to stakeholders
- Monitoring, review and oversight

As part of the consultation process, stakeholders are given the opportunity to provide feedback on the delivery of the process itself. The feedback is evaluated and used to fine tune future consultation processes.

Score: 95

Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for almost all areas of responsibility and interaction. The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used. The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.

All of the SG 80 are met and three of the SG 100 giving a score of 95.

Audit Trace References

Ministry of Fisheries Stakeholder consultation process Standard – executive summary www.fish.govt.nz
 MFish Sustainability and Regulation Advice process
 Initial Position Papers- MFish
 Final Advice Papers – Mfish

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
3.1.3	Long term objectives The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach.	Long-term objectives to guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <u>implicit</u> within management policy.	<u>Clear</u> long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <u>explicit</u> within <u>and required by</u> management policy.

Scoring Comments
<p>Significant long term fishery and environmental objectives are included within both NZ fisheries and environmental legislation and these guide decision making.</p> <p>S 10 of the Fisheries Act Information principles says</p> <ul style="list-style-type: none"> • All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles: <ul style="list-style-type: none"> (a) Decisions should be based on the best available information: (b) Decision makers should consider any uncertainty in the information available in any case: (c) Decision makers should be cautious when information is uncertain, unreliable, or inadequate: (d) The absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act. <p>Fisheries 2030 sets the strategic direction for the management and use of New Zealand’s fisheries resources. One of the principles guiding Fisheries 2030 is “Precautionary approach: particular care will be taken to ensure environmental sustainability where information is uncertain unreliable or inadequate.”</p> <p>The National Fisheries Plan for Deepwater and Middle-depth Fisheries (the National Deepwater Plan) establishes the five year enabling framework for the management of New Zealand’s deepwater fisheries. It is further divided into two parts – Part 1A and Part 1B.</p> <p>i) Part 1A details the overall strategic direction for New Zealand’s deepwater fisheries. Specifically it describes:</p> <ul style="list-style-type: none"> a. The wider strategic context that Fisheries Plans are part of, including Fisheries 2030 b. The description and status of the management objectives that will apply across all deepwater fisheries c. How the National Deepwater Plan will be implemented and how stakeholders will be engaged during the implementation phase. <p>Part 1A of the National Deepwater Plan has been approved by the Minister of Fisheries under Section 11A of the Fisheries Act 1996. This means that it must be considered each time the Minister makes decisions or recommendations concerning regulation or control of fishing or any sustainability measures relating to the stocks managed through this plan.</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Part 1B comprises the fishery-specific chapters of the National Deepwater Plan which provide greater detail on how deepwater fisheries will be managed at the fishery level, in line with the management objectives. To date, fishery-specific chapters have been completed for the hoki, orange roughy, SBW, and ling fisheries. These chapters also include the key commercial bycatch (retained species) fisheries that are associated with the target fisheries. The fishery-specific chapters describe the operational objectives for each target fishery and their key bycatch species, as well as how performance against both the management and operational objectives will be assessed at the fishery level. These chapters also describe any agreed harvest strategy in place for the relevant species.

On an annual basis the National Deepwater Plan is delivered through the Annual Operational Plan which describe Management Actions scheduled for delivery during the financial year for which the Operational Plan applies, and the Management Services required to deliver the Management Actions. The Annual Operational Plan also clearly demonstrates how these Management Actions contribute to the long-term objectives in the National Deepwater Plan.

Score: 100

Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within management policy and required by management policy thereby meeting the SG 100.

Audit Trace References

Fisheries Act 1996
 Ministry of Fisheries (2009a). Fisheries 2030. 15p. (33)
 Ministry of Fisheries (2010b). National Fisheries Plan for Deepwater and Middle-depth Fisheries. 53p. (36)
 Ministry of Fisheries (2011). Research Specifications for the 10-Year Research Programme for Deepwater Fisheries. DFR2010-02 Appendix One: July 2011 (42)

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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3.1.4	<p>Incentives for sustainable fishing The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.</p>	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that negative incentives do not arise.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and <u>explicitly considers</u> incentives in a <u>regular review</u> of management policy or procedures to ensure that they do not contribute to unsustainable fishing practices.
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Scoring Comments

In setting a TAC for the fishery the Minister of Fisheries as well as taking into account the status of the stocks and all environmental considerations, is required under Section 13 of the Fisheries Act 1996, to have regard for social, cultural and economic issues as he considers relevant.

The Quota Management System and ITQ policies provide stability and security for fishers

Customary and legal rights are taken into account in the management system. There is recognition of treaty partnership between Maori and the NZ government for the protection of customary harvest rights in fisheries.

There are mechanisms in place and opportunities for stakeholders are actively involved in the management of fisheries

There are no direct subsidies which could contribute to unsustainable fishing

Score: 100

As described in the scoring comments above, the management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure that they do not contribute to unsustainable fishing practices. Therefore the SG 100 is met.

Audit Trace References

Fisheries Act 1996
Treaty of Waitangi (Fisheries claims) Settlement Act 1992

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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3.2	Fishery- specific management system		
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3.2.1	Fishery- specific objectives The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <u>implicit</u> within the fishery's management system.	<u>Short and long term objectives</u> , which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <u>explicit</u> within the fishery's management system.	<u>Well defined and measurable short and long term objectives</u> , which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <u>explicit</u> within the fishery's management system.
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Scoring Comments

Short and long term objectives are explicit in the management system as evidenced in the Fisheries Act and in the Initial Position and Final Advice Papers each year and also in the Medium term research plan. It is recommended that the National Plan for Deepwater and Middle – depth Fisheries as well as the Annual Operating Plan – Deepwater fisheries 2009-2010 and the Annual Review Deepwater Fisheries 2009-2010 are implemented as soon as possible, after appropriate consultation.

The Ministry of Fisheries, in collaboration with stakeholders has developed and implemented its Fisheries Plan framework. In addition to the Ministerial approved National Deepwater Plan, discussed under PI 3.1.3, the Ministry of Fisheries has also developed and consulted on (1) the fishery-specific chapters for SBW and (2) the Annual Operational Plan for 2011/2012 which describes the management actions that will be delivered during the current financial year to support both fishery-specific operational objectives and long-term management objectives. Specifically, the fishery specific chapter of the National Deepwater Plan also describes how performance in meeting the management objectives will be assessed.

The first Annual Review Report for deepwater fisheries will be produced after the 2011- 2012 financial year concludes. The purpose of the Annual Review Report is to assess progress towards meeting the operational objectives in the SBW fishery specific chapter and the long-term management objectives described in the National Deepwater Plan. This will be done by reviewing the delivery of the management actions in the Annual Operational Plan.

Score: 85

Short and long term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system. SG 80 is met. The application of the material described above means that there are well defined objectives supported by a monitoring plan. However although objectives are well defined, they are not often measurable or able to be quantitatively tested (with the exception of harvested species catch limits). A score of 85 is awarded.

Audit Trace References

Ministry of Fisheries (2010b). National Fisheries Plan for Deepwater and Middle-depth Fisheries. 53p.
 Ministry of Fisheries. National Deepwater Plan: Fishery specific chapter for Sothern Blue Whiting (Finalized Aug 2011)
 Ministry of Fisheries (2011/12) Annual Operational Plan for Management of Deepwater Fisheries (41)

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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<p>3.2.2</p>	<p>Decision-making processes The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives.</p>	<p>There are <u>informal</u> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.</p> <p>Decision-making processes respond to <u>serious issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take <u>some</u> account of the wider implications of decisions.</p>	<p>There are <u>established</u> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.</p> <p>Decision-making processes respond to <u>serious and other important issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.</p> <p>Decision-making processes use the precautionary approach and are based on best available information.</p> <p><u>Explanations</u> are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.</p>	<p>Decision-making processes respond to <u>all issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.</p> <p><u>Formal reporting</u> to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.</p>
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Scoring Comments
<p>Management decision making processes are clearly outlined in the Fisheries Act 1996 and in various Ministry Papers including the Initial Position Papers and Final Advice Papers.. The Minister of Fisheries is the final decision maker. The Ministry has the responsibility to ensure that he is provided with carefully analysed alternatives for consideration before making any decisions. The Review of Sustainability Measures and Other Management Controls for each fishing year are provided to the Minister. Information and input from stakeholders is included in this document. There is evidence that decisions have been based on a precautionary approach.</p> <p>The Ministry has a planning process in place to establish future directions and priorities for fisheries research. This planning process involves consultation, planning and project development. Effective management of New Zealand's fisheries is underpinned by the purchasing of research that produces the high quality information required to ensure the sustainable utilisation of these resources. The management of fisheries to achieve these goals is based upon the scientific evaluation of:</p> <ul style="list-style-type: none"> • sustainable yield from fisheries resources; • the effects of fishing on the aquatic environment, including on the viability of associated or dependent species and on biological diversity; • alternative strategies for achieving the desired level of yield while avoiding, remedying, or mitigating adverse effects of fishing on the aquatic environment; • analysis of relevant cultural, economic, and social factors that may need to be included in the management decision process; and • specific measures needed to implement the preferred strategy.

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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The Ministry produces a Statement of Intent every year. This publication looks out over the next five years and sets out the Ministry of Fisheries' core role and how it will work with a wide range of parties who participate in government planning and decision-making in fisheries management.

Score: 95

There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. Decision-making processes use the precautionary approach and are based on best available information. Formal reporting to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity. All SG 80 is met and three of the SG100 giving a score of 95.

Audit Trace References

- Fisheries Act 1996
- MFish Statement of Intent 2009 www.fish.govt.nz
- MFish Initial Position Paper
- MFish Final Advice Paper
- MFish Review of Sustainability Measures and Other Management Controls
- The Ministry of Fisheries Research Planning and Implementation Cycle
- Priority setting Standards for 2009/10

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>3.2.3 Compliance and enforcement Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with.</p>	<p>Monitoring, control and surveillance <u>mechanisms</u> exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.</p> <p>Sanctions to deal with non-compliance exist and there is some evidence that they are applied.</p> <p>Fishers are <u>generally thought</u> to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.</p>	<p>A monitoring, control and surveillance <u>system</u> has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.</p> <p>Sanctions to deal with non-compliance exist, <u>are consistently applied</u> and thought to provide effective deterrence.</p> <p><u>Some evidence exists</u> to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.</p> <p>There is no evidence of systematic non-compliance.</p>	<p>A <u>comprehensive</u> monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.</p> <p>Sanctions to deal with non-compliance exist, are consistently applied and <u>demonstrably</u> provide effective deterrence.</p> <p>There is a <u>high degree of confidence</u> that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.</p> <p>There is no evidence of systematic non-compliance.</p>

Scoring Comments
<p>NZ endeavours to deter fisheries related offending through successful prosecution and deterrent penalties. Penalties for fisheries related offences include fines, forfeiture of fish, vessels, other property and quota, and imprisonment.</p> <p>A number of monitoring, control and surveillance tools are used to control the activities of vessels fishing within NZ fisheries waters including:</p> <ul style="list-style-type: none"> • Fishing permit requirements • Requirement to hold annual catch entitlement to cover all target and bycatch species caught, or alternatively, to pay deemed values • Fishing permit and fishing vessel registers • Vessel Monitoring System (VMS) requirements • Vessel and gear marking requirements • Fishing gear and method restrictions • Observer Programme • Reporting (including catch and effort reporting) requirements • Vessel inspections • Control of landings (e.g. requirement to land only to licensed fish receivers) • Record keeping requirements

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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- Auditing of licensed fish receivers
- Control of transshipment
- Monitored unloads of fish
- Information management and intelligence analysis
- Analysis of catch and effort reporting and comparison with VMS, observer, landing and trade data to confirm accuracy
- Boarding and inspection by fishery officers at sea
- Aerial and surface surveillance, and
- Any other measures agreed by Regional Fisheries Management Organisations (RFMOs)

There are elements of offending in the NZ Deep Sea Fisheries. In order to address this offending the Compliance business conducts a Risk based assessment against each Fishery and identifies risks then determines intervention techniques to mitigate the risk with the ultimate aim being a change of behaviour by fishing entities.

Having identified the risk the Ministry of Fisheries Field Operations Branch applies services from its Delivery Framework. The Risk identified influences the compliance option selected however the model should be viewed as a range of options that could be applied concurrently, sequentially or individually. It is not a graduated response model.

MFish have confirmed that Observers have and will in the future be utilised as part of the Ministry’s monitoring capabilities and will be apportioned to risk entities be that by fishery or even individual vessels.

The Ministry is currently working in collaboration with Industry on the Observer Programme and there is an acknowledgement that Observers will play a greater monitoring role into the future in New Zealand Deepwater Fisheries with observers not just conducting scientific and biological sampling but also to be utilised in mitigating risks in the deep sea fishery. Currently the Compliance Business Group has 100 dedicated sea days however with the Observer business coming back into the Field Services Business Group, coupled with enhanced maritime Surveillance planning, Use of Defence assets and the six new navy vessels for domestic use, will see a significant increased surveillance and monitoring effort in the deep sea fisheries including a greater utilisation of Observers.

Although there has been evidence, in the past, of non-compliance this is not considered to be systematic and has been dealt with by MFish.

Two recent report by Bremner et al 2009 and Burns and Kerr 2008 have raised serious issues concerning the underreporting of bycatch. It is recommended that these issues are further investigated and it is the Ministry’s intention to do so. The reports refer to fisheries other than southern blue whiting (hoki and ling) and as the Bremner et al say, “Misreporting differed by location and only three ling bottom longline fisheries were investigated. Consequently, these results cannot be generalised to other fisheries or other locations, indicating the importance of further investigation of bycatch misreporting in other significant fisheries.” The Ministry is currently working in collaboration with Industry on the Observer Programme and there is an acknowledgement that Observers will play a greater monitoring role into the future in New Zealand Deepwater Fisheries.

Score: 90

A comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules. Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence. Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery. There is no evidence of systematic non-compliance. All of the SG 80 is met and two of the SG100 giving a score of 90.

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Audit Trace References

MFish Compliance – Fisheries Service Delivery Model
Fisheries Act 1996
Observer Seadays Plan for 2009 – 2010(final)
Observers report
VMS
Compliance Information Sheet July 2009. Topic Area Misreporting.
Burns R. and Kerr G 2008. Observer effect on bycatch reports in the NZ Ling bottom longline fishery. NZ Journal of Marine and Freshwater Vol 42, p 23-32
Bremner G., Johnston P., Batesien T., and Clarke P. 2009. Unreported bycatch in NZ Westcoast South Islands hoki fishery. Marine Policy 33 p 504-512

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
3.2.4	Research plan The fishery has a research plan that addresses the information needs of management.	<p><u>Research</u> is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.</p> <p>Research results are <u>available</u> to interested parties.</p>	<p>A <u>research plan</u> provides the management system with a strategic approach to research and <u>reliable and timely information</u> sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.</p> <p>Research results are <u>disseminated</u> to all interested parties in a <u>timely</u> fashion.</p> <p>A <u>comprehensive research plan</u> provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and <u>reliable and timely information</u> sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.</p> <p>Research <u>plan</u> and results are <u>disseminated</u> to all interested parties in a <u>timely</u> fashion and are <u>widely and publicly available</u>.</p>

Scoring Comments
<p>The Ministry has a planning process in place to establish future directions and priorities for fisheries research. This planning process involves consultation, planning and project development. The Research Co-ordinating Committee meets annually with fisheries stakeholders to discuss, evaluate, and make recommendations on the direction of research. The recommendations come from Research Planning Groups who contribute to the process in regards to specific research areas</p> <p>Fisheries research falls into six key areas each of which has its own specific goal. These research areas and associated goals are:</p> <ul style="list-style-type: none"> • Fisheries Resources - to provide the information on sustainable yields and stock status required for the sustainable utilisation of New Zealand's fisheries resources; • Harvest Levels - to determine the nature and extent of commercial and recreational catch, Maori customary take, illegal catch, and fishery induced mortality; • Cultural, Economic, and Social Research - to provide information on cultural, economic, and social factors that may need to be considered in the management decision making process to enable people to provide for their social, economic and cultural well-being; and • Traditional and Customary Research - to provide information on the traditional and customary factors that may need to be considered in the management decision making process to enable the Minister to discharge his/her obligations to tangata whenua under the Deed of Settlement and the Treaty of Waitangi (Fisheries Claims) Settlement Act to enable Maori to provide for their traditional and customary well-being. <p>The Middle depths and Aquatic Environment Medium term Plans are readily available and stakeholders provide input into these plans.</p> <p>The Ministry of Fisheries in collaboration with the DWG has developed and implemented a 10-Year Research Program for deepwater fisheries. The research programme focuses on research to monitor and assess stock status and research to monitor interactions with the marine environment. The research programme also has the flexibility to deliver one-off specific research projects to address particular management requirements. The three SBW fisheries are included in this programme and the following research has been planned and contracted for delivery for the ten year period starting in 2010-11.</p> <p>Stock - The three SBW fisheries will be monitored using a combination of wide area (SBW6I) and aggregation based (SBW6B & SBW6R) acoustic surveys. In turn stock status will be assessed through a regular programme of stock assessments. The stock assessment process will also report the status of the stock against the harvest strategy</p> <p>Regular research projects are planned and contracted to monitor the environmental effects of deepwater fishing activity on the marine environment. These projects include the three SBW</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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fisheries under assessment.

The MFish Research planning process ensures that result are disseminated to all interested parties in a timely fashion

Score: 90

A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC’s Principles 1 and 2. Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available. The plan is comprehensive and there is evidence of overall strategic research planning. All SG 80 is met and one of the SG100.

Audit Trace References

- Ministry of Fisheries (2011). Research Specifications for the 10-Year Research Programme for Deepwater Fisheries. DFR2010-02 Appendix One: July 2011 (42)
- Ministry of Fisheries. National Deepwater Plan: Fishery specific chapter for Sothern Blue Whiting (Finalized Aug 2011) (43)
- Ministry of Fisheries (2011). Research and Science Information Standard for New Zealand- April 2011, 31 p.

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>3.2.5 Monitoring and management performance evaluation There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives.</p> <p>There is effective and timely review of the fishery-specific management system.</p>	<p>The fishery has in place mechanisms to evaluate <u>some</u> parts of the management system and is subject to <u>occasional internal</u> review.</p>	<p>The fishery has in place mechanisms to evaluate <u>key</u> parts of the management system and is subject to <u>regular internal</u> and <u>occasional external</u> review.</p>	<p>The fishery has in place mechanisms to evaluate <u>all</u> parts of the management system and is subject to <u>regular internal</u> and <u>external</u> review.</p>

Scoring Comments
<p>The management system has internal processes to evaluate management performance. These include the policy, research, operations, compliance and enforcement. Also refer MFish Statement of Intent. The Ministry is currently undergoing a major review of its structure and functions.</p> <p>The stock assessment process is rigorously reviewed both internally and externally</p> <p>The development and implementation of the Fisheries Plan framework – National Deepwater Plan, fishery specific chapters, Annual Operational Plan and Annual Review Report – ensures there is a structured process to ensure the performance of the fishery specific management system against its objectives. There is full stakeholder engagement on the development of all components of the Fisheries Plan framework and all documents are publicly available.</p> <p>The Ministry implements a comprehensive peer review process for all science research that is used to inform fisheries management decisions. In addition to the recently released Research Standard it also includes:</p> <ol style="list-style-type: none"> A range of science working groups which include members of the scientific community, research providers, commercial fishers, fisheries managers and environmental stakeholders The availability of all peer reviewed and accepted research papers to the wider public Options for independent and external peer review of novel or contentious research. <p>The Ministry of Fisheries completes annual external audits whereby the performance of the Ministry’s fisheries management regime is assessed against the outcomes specified in the Statement of Intent. The result of this audit is publicly available through the Ministry’s Annual Report. Copies of the latest iteration of the Annual Report and the Statement of Intent are available. Previous versions of both documents can be found at the Ministry of Fisheries website www.fish.govt.nz.</p> <p>Deepwater Group Ltd management have mechanisms in place to evaluate all parts of the management system and is subject to regular internal and external review. Specifically, the successful</p>

SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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implementation of the quality management system for the hoki fishery has been designed to cover all DWG activities and includes:

- Quality Management Manual (Deepwater Group Ltd, 2010), which covers company structure; mission and the quality management system, which includes document control, project management, internal audits, corrective action and staff training, etc.;
- Management Manual, which includes company overview and operational procedures;
- An auditing system, to cover governance and policy; finance and management procedures; science and research; operational and administration procedures;
- Regular internal audits are undertaken by internally trained staff and an annual external audit.

Score: 90

The fishery has in place mechanisms to evaluate most parts of the management system and is subject to regular internal and occasional external review. SG 80 is met and some of SG100

Audit Trace References

MFish Statement of Intent.
 Working group report
 MFish Annual Report

Appendix B: Peer Review Reports

1. Peer Reviewer Biographies
2. Peer Review Report A
3. Peer Review Report B

Dr Michael Gregg Pawson.

Mike Pawson recently retired as senior fisheries advisor at Cefas, Lowestoft, after 39 years carrying out biological research and providing scientific advice to Defra, the EC and other national and international organisations on fish stock abundance (salmonids, eels, marine teleosts and elasmobranchs), technical conservation measures and fisheries management regulations, and on related monitoring, sampling, survey and research programmes. Between 1974 and 1980 he initiated and led acoustic surveys for blue whiting and mackerel, and trawl surveys in the North Sea and, from 1980 to 1990, designed and managed MAFF's coastal fisheries programme, implementing biological sampling, trawl surveys, a fishermen's logbook scheme and socio-economic evaluation of sea bass fisheries. Between 1990 and 2002 Mike led the Cefas Western demersal team, providing analytical assessments and management advice for 12 finfish stocks and, since 2002, directed and managed the assessment of salmon and eel stocks in England and Wales and provided scientific advice on their conservation.

During this time he was co-ordinator of the Anglo-French English Channel Fisheries Study Group (1989-1997), chairman of the ICES Southern Shelf Demersal Stock Assessment Working Group (1996-98), Seabass Study Group (2000-04) and Elasmobranch Study Group (2001-02), and initiated and managed EU-funded multi-national projects on methods for egg-production stock biomass estimation, bio-geographical identity of English Channel fish stocks, bio-economic modelling of Channel fisheries, development of assessment methods for elasmobranchs, marine recreational fishing in Europe etc. He recently managed the preparation of 9 Seafish responsible sourcing guides.

Mike has provided scientific evaluation, quality assurance and advice to several national and EC-funded projects on fisheries biology, monitoring and assessment, and one of his major roles over the last 15 years has been peer-reviewing scientific papers, project proposals, reports and manuscripts in preparation. All of Mike's work has been published in refereed Journals, in ICES and EC working group reports, and in contract reports.

Dr. Johanna Pierre

Johanna completed her BSc(Hons) in Zoology at the University of Canterbury, New Zealand, and followed that with a PhD in ecology and environmental biology at the University of Alberta, Canada. In the course of conducting her PhD research on the ecological impacts of forestry activities in northern Canada, she became especially interested in working at the environment - economic interface. After completing a post-doctoral fellowship in biodiversity science at the University of Tokyo, Japan, Johanna returned to New Zealand to work at the Department of Conservation (DOC).

During her time at DOC, Johanna focussed on the environmental effects of fishing. This included leading a team producing science, policy and management tools for the New Zealand commercial fisheries environment. As well as working with New Zealand-based stakeholders, Johanna maintained extensive international engagement, for example, with Regional Fisheries Management Organisations, as New Zealand representative for the Agreement on the Conservation of Albatrosses and Petrels, and as a practising scientist.

Currently, Johanna leads New Zealand's science and innovation engagement with north Asia for the Ministry of Science and Innovation (MSI). Outside her MSI role, she continues to work on fisheries-related issues.

Peer Reviewer A

Overall Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	No	Certification Body Response
<p>Justification: See comments below against 5.2 Stock Assessment models and estimation and 5.3 Stock Status. The over-detailed description of the Campbell Isle SBW stock assessment makes it difficult to understand the basis for evaluation of its stock status, though it does appear to satisfy the criterion of >40% B₀ (if that is considered an appropriate proxy for B_{MSY}). It is much less certain that either of the two other stocks satisfy this criterion, chiefly because there has been no recent assessment and/or the model being used appears not to reflect the observed population dynamics and has other uncertainties. If the assessment team can more robustly defend the scoring here, the overall assessment is probably reasonable, but, if not, a number of marks may have to be reduced for the Bounty Platform and/or Pukaki Rise UoCs.</p>		<p>We have improved the description of the rationale behind the scoring. It should now be clearer. In particular, the link to Principle 3 and the management approach to uncertainty and risk is more clearly identified as the necessary pre-requisite for certification. The reviewer found the overall management approach (Principle 3) acceptable, but found fault with the implementation. We have tried to be consistent and believe we have reached the correct conclusion, but this has required us to highlight certain issues for the surveillance audit, which will require careful monitoring to ensure management implementation is consistent with our expectations.</p>

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?	Yes	Certification Body Response
<p>Justification: The single condition concerns the lack of a strategy to minimize impact on sea lions in the main UoC (Campbell Isle), or to ensure that levels do not become unacceptable. The condition requires that, within two years of certification, the level of interaction that would lead to adverse effects on sea lion population levels is identified and, if a problem is identified, appropriate management approaches are developed to achieve national requirements (which should take into account all fishery interactions with the sea lion population around New Zealand).</p> <p>NB last sentence should probably read: "While the fishery impact appears highly unlikely to create unacceptable impacts on sea lion populations (2.2.1), there is no formal mitigation strategy to ensure this remains so, <u>and</u> analytical evidence to provide an objective basis for confidence that the operational strategies in place will work <u>is</u> <u>lacking</u>."</p>		<p>We have modified the text of the sentence to read "...in place will work is limited." given that there is some information to develop analytical evidence (see 2.3.3), but as correctly observed by the reviewer, this is currently insufficient to provide an objective basis for confidence that these strategies will achieve the intention of the management strategy</p>
Do you think the client action plan is sufficient to close the conditions raised?	No	Certification Body Response
<p>Justification: The client action plan concerns only monitoring of the level of NZ sea lion interactions (there are no agreed mitigation measures at present, and these are not demonstrably effective, otherwise this condition would not have been raised), and should also include development of mitigation measures should they be considerate necessary.</p>		<p>This has been adjusted based upon this and the comments of the other reviewer.</p>

General Comments on the Assessment Report (optional)

The information presented on the New Zealand Southern Blue Whiting (SBW) fishery is generally sufficient to support the marks given in the Scoring Table. There is a potential for confusion in the latter as the site visit was conducted in July 2009 whilst the assessment report was completed for peer review in November 2011. It is important to clearly establish the basis for scoring criteria, especially in relation to Principle 1, Stock Assessment and Stock Status, indicating how the scoring indicators fit with MSC's evolving definitions and criteria (which are now referenced to MSY) and the Policy advisories that apply (PA12v2, 19 Jan. 2011, in this case, it appears). An explanation of why the Risk-Based Framework was not used for the two stocks without acceptable recent assessments is required.

IMM response: The basis for scoring was information during the site visit and the most up-to-date information on stock status from 2010 and 2011. A justification for not using RBF has been added to the text. It was not considered appropriate to use RBF because, among other things, an assessment had been conducted (albeit in 2002) which is much more rigorous than the RBF.

Glossary of acronyms: Please check this extensive list to eliminate anything not mentioned in the text, and include reference points (e.g. B0). Also, check that each acronym is only defined once in the text (at first mention, if necessary).

IMM response: The glossary has been updated

Specific comments

2.1 The fisheries proposed for certification: shows three Units of Certification (UoC), distinguished only by area, viz: Bounty Platform, (SBW 6B); Campbell Island Rise (SBW 6I); and Pukaki Rise (SBW 6R). Please make sure that these areas are clearly recognisable in Fig.1 (in which labeling appears very indistinct on my PC monitor).

IMM response: A new Fig 1 has been inserted.

2.2 Report Structure and Assessment Process: is the CB Moody Marine Ltd or Intertek Moody Marine Ltd?

IMM response: The confusion has arisen as, at the time of the site report and initial draft the certifying body was called Moody Marine Ltd. There has since been a change of ownership and the certifying body is Intertek Moody Marine. The report has been changed so that all references are Intertek Moody Marine.

2.3 Stakeholder meetings attended: who/what is ECO (not in Glossary)?

IMM response: Environment and Conservation organization. An eNGO based in New Zealand. This has been added to the glossary

4.2 Biology of the Target Species: you note here (and again at **4.3 History of the fishery**), that SBW is predominantly found in sub-Antarctic waters, dispersed throughout the Campbell Plateau and Bounty Platform for much of the year, but during August and September they aggregate to spawn with 4 spawning areas identified on Bounty Platform, Pukaki Rise, Auckland Islands Shelf and Campbell Island Rise. Is there any extension of the species' distribution outside the New Zealand EEZ and, if so, are they exploited there by other countries' vessels? (section 5, **Stock assessment and stock status**, suggests not)

IMM response: As far as we are aware, these stocks are not exploited outside New Zealand EEZ. Only spawning aggregations are exploited and these gather in limited areas associated with islands and seamounts within New Zealand jurisdiction.

In the description of the annual catches, it would be useful to indicate whether the various catch limits introduced were a response to the need for catch allocation and/or restrictions on exploitation for conservation reasons, and whether the quotas were analytically based.

IMM response: All TACs are set for conservation reasons and all quotas were based on analyses and scientific advice.

4.4 Fleet and Gear Description : how many vessels have been operational in this fishery (each year), and from which countries? **Table 4** is confusing, and could be replaced by stating the number of vessels that reported landings of SBW during the year 2008/09 (and 2007/08?), all using trawls and >28 m in length, and explaining whether this was a total of 14 – 32 vessels.

IMM response: This has been added to the report. There are 16 factory trawlers, 6 fillet from New Zealand, 1 surimi from Japan, 6 head and gut with meal plant Ukrainian and 3 head and gut from Korea

Although the mesh sizes used in the mid-water trawls may range from 65 m near the mouth (hardly a “mesh”) to 100 mm in the cod end, what is the usual mesh size range in the area where fish are actually retained or escape, and what are the gears’ selection characteristics for SBW given that regulations prescribe a minimum mesh size of 60 mm for cod end for trawls used in these fisheries? Is there a minimum landing size for SBW (presumably not, as discarding is not allowed)?

IMM Response: There is no minimum landing size for SBW.

5.1 Abundance indices: you note that the primary information on abundance of SBW stocks are the acoustic surveys, which appear to have been conducted every 2 years from 1993 until around 2001 in each UoC area, and from 2002 – 2009 on Campbell Island Rise (Table 6), and each year 2006-2010 on Bounty Platform (Table 5, why not in Table 6?). As different vessels and survey schemes were used (though I note the use throughout of the recent target strength etc values), how robust are the year-on year changes in “absolute” abundance observed through this time series? Also, have the latter been disaggregated into age groups (Tables 5 and 6) using information from sampling for age and sex in surveys or from commercial catches?

IMM response: The estimate of robustness of the biomass estimates is available from the survey sampling error and stock assessment. These report probability densities for the estimates and references in our report are provided for this information. There is no reason to suppose these are incorrect, although as in any such exercise unknown structural error is likely to be a problem. There is significant uncertainty associated with the spawning biomass since the survey depends on its aggregation, so there are behavioral elements to the measurement. Trawls are used to catch samples from the surveyed biomass and commercial catch is sampled regularly. This supplies information on age and sex composition (Table 6, 8) used in the stock assessment.

A summary table showing the years in which surveys were made and assessments run for each of the 3 stocks would be very useful.

IMM response: The years in which surveys were carried out is already provided for each stock. We are unsure about when analytical assessments were made in the early years and cannot really comment on the management process at this time, so such a table could be misleading.

5.2 Stock Assessment models and estimation, Campbell Island Rise stock: most of this section, from *Prior distributions and penalty functions* to **Figure 3** is likely to be unintelligible to most of the target readership of this report, and would benefit greatly by being reduced to a précis that focuses on the final (best) model output and what this says about stock status. Anyone whose technical speciality is analytical stock assessment can always look at Dunn and Hanchet (2011) if they need more detail. Some comment on the reliability of the estimate of B₀ is required, as this is the only basis for evaluation of stock status and there is clearly some doubt if the estimate has been increased by 50% due to recent (possibly) strong recruitment.

IMM response: The reviewer is probably right that this section is too technical for most readers. We could delete this section, but we wished to impart some idea of the rigour applied in the stock assessments, rather than only report simplified results. The reliability of the B₀ estimate with variable recruitment is clearly

uncertain. As far as we can ascertain the treatment of this variability is appropriate. For example, an upward bias in B_0 requires higher limit and target biomass which should be safer. This is commented in the scoring table.

Is there an explanation for the very high abundance of SSB for the **Bounty Platform** stock in 2007 and 2008 (150,000 t vs 20-30,000 t in adjacent years), which seems highly unlikely for a species with the SBW's life history, and may be more a function of variable survey coverage of spawning aggregations? This may contribute to the perceived problems with the assessment model, and the observation that the Working Group uses a precautionary lower estimate of recent biomass as the basis for management advice. Has the Assessment Team any comment on the use of this assessment model for projections and to estimate reference points and the attendant WG assumptions for determining yield estimates for management of the fishery?

IMM response: There are explanations, but none can be confirmed. The issue appears to have been the low biomass detected in years after 2008 rather than the high years in 2007 and 2008. The scientific group did not believe that the acoustic survey was detecting biomass which was not there, but could miss biomass. Our understanding was that the disappearance of biomass in 2009 was thought possibly due to the survey missing the main aggregations, but when the biomass was not detected again in 2010 this seemed to confirm the biomass was not present. In our opinion, the management response to estimates of the large biomass had only been a cautious increase in TAC, and since the high biomass has not been undetected TAC is being reduced appropriately.

You suggest that the last assessment of the **Pukaki Rise** stock was carried out in 2002, after which it has been only lightly exploited, though catches increased in 2009 and 2010. How is it known that trends in trawl survey biomass estimates up to 2009 are consistent with biomass trajectories from stock assessments (if the last assessment year was 2000)?

IMM response: This is not considered a "high pressure" stock. The stock assessment indicated a safe level of catch, which, as long as the industry did not request higher levels, should not lead to depletion of the spawning aggregation in this area. Hence, by limiting catches to a low precautionary level, detailed monitoring is unnecessary. The closer the fishery is to MSY, the more precise the estimates of biomass are required. The trawl survey is not thought to be precise, but adequate to detect significant changes in stock status, corroborated using data from the other stocks.

In all cases, the main assessment problem may be the highly aggregated nature of the fisheries and surveys compared to the total distribution of the SBW population (as juveniles and outside the spawning season: do individual adults spawn each year?).

IMM response: This is correct. The main issue is the fishery and information are focused on the spawning aggregations rather than the whole stock. While this does limit the accuracy of the analytical assessment, understanding of the population dynamics and advantage is that acoustic surveys can be used to set a safe level of catch to remove each year.

We should not and do not do a technical review of the stock assessment. There is no opportunity to request more information or research than that already publicly available. We focus on the process (different component of the harvest strategy) to ensure that best practice is applied. We do not endorse any particular set of estimates, but report the estimates that are available and check that these were derived using best practice, which also depends on professional judgment of the various scientists and reviewers involved in developing the stock assessment.

5.5 Stock status: you conclude that the **Campbell Island Rise** stock in 2009 was considered likely to be at or above the target level (40-60% of B_0 compared to the target of 40%), and very unlikely to be below the limit reference point (20% B_0), but make no mention of either F_{MSY} or a corresponding Biomass Target (current MSC requirement). This omission is curious given that, under **6.5 Harvest Controls**, the New Zealand Quota Management System has MSY as its objective, setting TACs against estimates of MSY.

Although the WG determined that the **Bounty Platform** stock in 2009 was unlikely (< 40% chance) to be below the limit reference point ($B_{20\%}$), there appears to be little evidence that its status is $>B_{pa}$ or B_{MSY} target, and there is no

information on F.

Given that an assessment of the **Pukaki Rise** stock has not been updated since 2000, and with no information on F (even if “exploitation has been light”), it is difficult to see where the evidence is that indicates it is likely to be above the level that will support the MSY.

IMM response: 40% and 20% of B0 is being used a proxy with the same intent as MSY in the MSC fisheries assessment methodology (FAM). Use of the biomass estimates in this way should achieve the same outcome as the MSC FAM requires and this is made clear in the scoring table under PI 1.1.2. Given the periodic detected high biomass for this species, either the catches are set for the worst case (assuming no large recruitments as for the Pukaki Rise), or monitoring is used to confirm biomass and a proportion of this is removed (through acoustic surveys for Campbell Island Rise and more recently Bounty Platform). The target reference region is present and based on risk. There is often a confusion in the way MSC and fisheries define these points, and how they are used in the harvest control rule. Text has been added to the scoring table to help clarify our interpretation. Fishing mortality is estimated analytically, but does not form an explicit part of the management decisions. Management decisions are based on TAC and catches against the estimated biomass, which effectively is the same thing (i.e. there is information on F for all these stocks).

The implication of the reviewer’s view here is that a fishery could not be sustainable without frequent analytical stock assessments. We do not believe that this is correct, and this is not required by the MSC FAM. Rather the MSC FAM requires a rational basis for the harvest strategy applied which can be justified on sustainability criteria (MSY, precautionary approach etc.). It is not a prescriptive descriptive of fisheries management although it does have additional requirements to ensure that the management is auditable.

6. Fishery management framework: although there are/have been science-based stock assessments for SBW, nowhere in the report is there any explanation of how scientific advice fits into the management system, or whether the assessments are subject to internal or external scrutiny. The role of science in the management framework, and its impact on management decisions (e.g. setting TACs) needs to be more clearly spelt out.

IMM response: Text has been added.

7.1 Ecosystem characteristics: I cannot see the “footprint” of the SBW fishery (in relation to habitat features) in Figure 7, nor is it presented elsewhere. This would be useful.

IMM response: This has been added to the report

7.2 By catch (retained and discarded species): NB, check table numbers in text and captions (e.g. “Top 10 species (retained and by catch) ----displayed in Table 23”; is actually Table 18).

Paragraph 5: you say that, in theory, action would be initiated if negative trends in particular key retained species were identified. Is there any evidence that this has ever happened?

IMM response: : text has been added providing examples of management action by the NZ Ministry, citing the closure to fishing of two orange roughy stocks, and the managed decrease in TACC for the Chatham Rise orange roughy stock.

8 Other Fisheries affecting target stock: is there evidence that the SBW populations caught within the New Zealand EEZ are not exploited outside the NZ EEZ.

IMM response: There is no evidence that the SBW population caught within the NZEEZ are not exploited outside the NZEEZ

10.1 Evaluation Team: please check current (2011) affiliations for team members.

IMM response: this has now been done

12. Observations and scoring (see general comments): given the protracted period over which this assessment has been put together (site visits in July 2009), it is important here to explain the version of the FAM used for scoring,

whether RBF (for example) is appropriate, and the MSC standards used (especially now that MSC has moved to an MSY-based criterion for stock sustainability).

IMM response: The MSC Certification Requirements (24 October 2011) are now operational. However Certifying Bodies were given the opportunity for fisheries that are being assessed using the FAM V1 to continue to be assessed against FAM (V1) requirements. In order to do this, IMM applied to the MSC for a variation for Southern blue whiting. This has been done and accepted. Therefore Southern blue whiting can still use FAM V1 until it reaches the point of re-certification.

Performance Indicator Review

Please complete the table below for each Performance Indicator which are listed in the Certification Body's Public Certification Draft Report.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
<i>Example: 1.1.2</i>	<i>No</i>	<i>No</i>	<i>NA</i>	<i>The certifier gave a score of 80 for this PI. The 80 scoring guidepost asks for a target reference point that is consistent with maintaining the stock at Bmsy or above, however the target reference point given for this fishery is Bpa, with no indication of how this is consistent with a Bmsy level.</i>	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.1.2	Yes	Probably	NA	See comments against 1.1.1. It is not clear how well the limit and target reference points (LRP = B20% and TRP = B40% respectively) have been calculated (SBW 6I excepted), nor is it possible to analytically demonstrate whether the latter would result in the stock being maintained at a level consistent with B_{MSY} . However, according to para. 9 of PA12.v2, MSC's guidance relating to TRP and LRP (given in FAM v2, and which applies to all fisheries in full assessment for which there is no published Public Comment Draft Report by 7 Feb. 2011) in the absence of analytically determined reference points, is that appropriately conservative assumptions are LRP=20% B0 and a TRP is consistent with B_{MSY} at 40% B0. Failing estimates of F_{pa} or F_{MSY} , therefore, robust estimates of current Biomass in relation to B0 would allow all elements of SG80 to be satisfied, provided that an explanation is provided as to how the TRP is similar in intent or outcome to maintaining the stock at B_{MSY} or above (PA12.v2, para 3).	Technical details are only provided for Campbell Rise, but the same procedure was applied for Bounty Island. Pukaki Rise is similar in approach (age structured statistical model), but being older there are differences. Specifically, there is more dependence on sustainable catches based on criterion laid out by Francis (1992). We believe this is a reasonable approach which should achieve the same outcome as required by MSC FAM.
1.1.3	Yes	Yes	NA		
1.2.1	Yes	Yes	NA		
1.2.2	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.2.4	SBW 6B No	No	No	<p>Given all the problems described for the analytical assessment of this stock, the latest of which has been rejected by NZ scientists, there is some doubt that even the SG80 elements are satisfied. You state that reference points are based on a previous age-structured model (CASAL), which did not fit the data, and that other approaches beyond the use of the CASAL model (and its variations) have not been explored. The assessment is, therefore, not evaluating stock status relative to reference points (SG80), though it may be appropriate for setting short-term catch controls.</p>	<p>SBW 6B The SG80 would not be met if the resulting assessment was inadequate for the harvest strategy. With the rejection of the analytical assessment, the assessment in this case is the acoustic survey. This is more precautionary than the analytical stock assessment and therefore is appropriate. It estimates biomass relative to the unexploited biomass based on best estimates from accepted analytical stock assessment. In our opinion, the process is working correctly, using and reacting to the best available scientific advice. Rejecting assessments is just part of the process, particularly for new fisheries. Accepting poor assessments or reacting inappropriately to such rejections would raise a problem identified under this PI or PI 1.2.1. The score carried forward was 90, the 95 was a typo which we corrected.</p>
	SBW 6I Yes	Yes	NA	<p>NB, the stock assessment meets 2 of the 4 SG 100 score requirements, and score of 90 is appropriate (not 95).</p>	<p>We agree with a number of observations made by the reviewer, but these are for SG100. We scored 6R at 80 and 6B at 90 which accounts for these. We note that the reviewer has no problem with the harvest strategy or harvest control rule. The stock assessment and data collection is an implementation of this rule and consistent with it. This includes the decisions related to where to place acoustic survey effort (areas of highest risk) and when to conduct analytical stock assessments.</p>
	SBW 6R	No	No	<p>The last assessment for this stock in 2002 was not Bayesian, did not report results in a probabilistic way, and "Estimates of biomass and yield for the Pukaki Rise stock were reported as very uncertain". Since then alternative hypotheses and assessment approaches have not been explored, and the current assessment of stock status is based solely on catch trends. Thus, it is unclear whether any of the SG80 elements is satisfied for this stock.</p>	
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Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.1.1 Retained species stock status	Yes	Yes	NA		
2.1.2 Management Strategy	Yes	Yes	NA		
2.1.3 Information and monitoring	Yes	Yes	NA		
2.2.1	Uncertain – see comments.	Yes	NA	<p>The MSC makes a clear distinction between by catch (i.e. not the target species) that is retained and landed (dealt with under 2.1.1-3 above) and by catch that is discarded at sea, which should be dealt with here. It is unclear from the scoring comments if this distinction has been maintained (surely, discard species would not appear in vessel logbooks or catch landing returns), so that only species not retained are dealt with under 2.2.1-3.</p>	<p>As noted in the main text, the retained species are - by regulation - QMS; non-QMS species are the subject of discarding. Observer data provides information on the discard bycatch species and quantities. This division has been maintained in the scoring guidepost table, unless a species is considered ETP. This text has now been repeated in the 2.2.1 scoring guidepost text to clarify.</p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.2.2	Yes	No	NA	Although there is a strategy to include species with substantial catches within the QMS system, this alone does not represent a strategy to ensure the sustainability of discarded species. Though the quantities of the latter in the SBW fishery are small, is there any attempt made to minimise their capture through technical measures (mesh sizes, escape gaps, closed areas, etc)? Otherwise a mark above 80 is not indicated.	As noted within the text, the southern blue whiting fishery is very clean, with 99% of the catch being of the target species. 80% of the remainder was QMS species, implying that 0.2% of the catch was non-QMS, levels which in most fisheries around the world would be considered quite exceptional. The operational strategy, being the clean nature of fishing, and the management framework to include any major non-QMS species within the QMS framework, provides a strategy, with clear evidence of its successful implementation, and hence the overall score of 90 is justified under the SG text. Developing additional technical strategies for such a small portion of bycatch would in our opinion be beyond the requirements of the SG text.
2.2.3	Yes	Yes	NA		
2.3.1 ETP Species, Status	Yes	Yes	NA		
2.3.2	Yes	Yes	Yes		
2.3.3	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.4.1	Yes	Yes	NA		
2.4.2	Yes	Yes	NA		
2.4.3	Yes	Yes	NA		
2.5.1	Yes	Yes	NA	NB From my comments against P1, I question whether there is adequate evidence that SBW stocks have been maintained at, or above, B_{MSY} . Please reconsider this statement, or provide better supporting evidence.	As noted above, and in the 2010 summary stock status table of the NZ Ministry of Fisheries, the SBQ stocks are considered to be at or above target (MSY) levels with high probability. The statement is therefore maintained, and a reference to the stock summary added to the table.
2.5.2	Yes	Yes	NA	See above	
2.5.3	Yes	Yes	NA		
3.1.1	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.1.2	No	Yes	NA	The role of scientists and scientific advice in the management process has been overlooked and should be included here (and earlier). There are no implications for scoring.	<p>Fishery-dependent and –independent data are available for stock assessment .Abundance indices based on trawl and acoustic Data on the age- and size-structure of the population are available from these surveys. Data on catch and effort are available.</p> <p>The New Zealand Ministry of Fisheries has developed a Research and Science Information Standard (Ministry of Fisheries, 2011a).</p> <p>The stock assessment is developed as part of the New Zealand MFish Working Group process All interested parties can be involved in this process and scientists from .research providers including NIWA and the MFish are always involved.</p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.1.3	No	Yes	NA	<p>SG80 requires that clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <u>explicit</u> within management policy. The comments suggest that the National Deepwater Plan includes a fishery-specific chapter for the SBW fishery that describes the operational objectives as well as how performance against both the management and operational objectives will be assessed at the fishery level. In which case, let us see what the long-term objectives are (i.e. make them explicit).</p> <p>Applies also to 3.2.1</p>	These have now been added into the report.
3.1.4	Yes	Yes	NA		
3.2.1	No	Yes	NA	See 3.1.3	At the fishery level, objectives are well defined, but often not measurable or able to be quantitatively tested (with the exception of harvested species catch limits). We have revised the score down to 85.
3.2.2	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.2.3	Yes	Yes	NA		
3.2.4	Yes	Yes	NA		
3.2.5	Yes	Yes	NA		

Any Other Comments

Comments	Certification Body Response

For reports using the Risk-Based Framework:

Performance Indicator	Does the report clearly explain how the process used to determine risk using the RBF	Are the RBF risk scores well-referenced? Yes/No	Justification: Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response:

	led to the stated outcome? Yes/No			
1.1.1				
2.1.1				
2.2.1				
2.4.1				
2.5.1				

For reports assessing enhanced fisheries:

<i>Does the report clearly evaluate any additional impacts that might arise from enhancement activities?</i>	Yes/No	Certification Body Response:
<u>Justification:</u>		

Peer Reviewer B

General Comments on the Assessment Report

Summary – In paragraph 2, consider clarifying the role of S. Davies in the assessment team/process. S. Davies was Project Coordinator and carried out administrative and logistic duties for the team.

Condition 1 – I suggest the following slight amendments for this Condition. The key differences from that in the Draft Report are the requirement for consideration of the Campbell Island subpopulation and the whole NZ sea lion population, considering the cumulative interactions of this fishery with other fisheries, structuring the Actions as two clear components, and incorporation of the national objectives and ‘hindering recovery’ elements.

IMM Response: we have modified the condition and the Client has adjusted the Client Action Plan accordingly. We have also added text under 2.3.2 indicating the limits of the fishery/sea lion interactions off Campbell Island, which mitigates the issue of cumulative effects from other fisheries. The timescale is maintained, reflecting the need to process information from different Departments within New Zealand Ministries.

Condition 1. ETP Management Strategy

Based on the analytical information available, while operational strategies appear effective at reducing seabird, fur seal and coral interactions, they appear less effective for sea lions. While the fishery impact appears highly unlikely to create unacceptable impacts on sea lion populations (2.2.1), there is no formal mitigation strategy to ensure this remains so, nor is there analytical evidence to provide an objective basis for confidence that the operational strategies in place will work.

Actions required: (i) Identify the level of ETP species interactions that would lead to adverse effects on population and sub-population levels for sea lions, including levels that would hinder recovery (PI 2.3.1), and including consideration of cumulative effects of this and other fisheries. (ii) Where a problem is identified, develop and implement appropriate management approaches to achieve national requirements and objectives, and meet MSC criteria (PI 2.3.1). (iii) Provide evidence that the strategy is being implemented successfully.

Timescale: (i) Within 1 year of certification, (ii) Within two years of certification. (iii) Within three years of certification.

Relevant Scoring Indicators: 2.3.2 (SBW 6I only)

2.4 Other sources – Edit formats used to ensure consistency across citations listed.

IMM Response: Formats edited

3 Glossary – Consider including MAY in this list (e.g. Table 13)

IMM response: MAY has been added to the glossary

4.1 Introduction – first sentence, clarify which quota holders

IMM response: This has been clarified in the text

Page 16, Note under Table 1 – any reason to assume mortality and length weight coefficients would differ between stocks (noting commentary page 21, 5, Hanchet 1998, 1999)?

IMM response: This is possible, but it is unlikely that a difference in mortality could be detected as estimating natural mortality is very difficult anyway. Length weight parameters might be different and would be easy to estimate, but most assessments rely on annual samples if data allow because length-weight may vary annually as well. Overall, such differences are looked for, but often swamped in observation error or other effects. We do not get deeply involved in the technical side, but as far as we are aware this issue has been addressed as best it can at the moment, but should be subject to improvements as the research and data sets on these stocks develop.

Table 4, SBW6R – 6 vessels seem to be unaccounted for in this row?

IMM response: A new table has been inserted into report.

5 Stock assessment, paragraph 1 – It appears the assumption is being made that there is no genetic basis to the morphometric differences observed. Is this reasonable?

IMM response: We are not sure this assumption is made or is necessary. The main problem with genetic differences is a lack of precision in levels of exchange between populations. Morphometric differences could suggest different growth and environment conditions or genetic differences. In either case, exchange of adults between populations is likely to be limited enough to manage them as though they are separate stocks. From our point of view, the key issue is whether the decisions over the management units are rational and precautionary, and this appears true in this case.

Text under Table 13, (ii) Bounty Platform stock (2010 assessment), third paragraph – Mention what, if anything, is being done to address issues with the model. Links to the two paragraphs following Table 14 also.

IMM Response: Text has been added, but we are not sure there is anything that can be done immediately to address this apart from increased levels of monitoring which is what the management response has been. In the longterm, research on natural mortality and behaviour may yield explanations which might be included in a model, although this also may require an improved understanding of the wider ecosystem.

7.1. Ecosystem characteristics, paragraph 2, penultimate sentence – What other vulnerable habitats are relevant here, e.g. coral beds?

IMM response: coral beds are considered more fully in Section 7.3 (ETP), and a reference to that section has been included within the text of 7.1.

7.2. Bycatch and retained species – A table identifying which species was included in each category would be helpful.

IMM response: Table 18 has been updated to indicate QMS (retained) **species**

- In my view, the fishing approach in SBW is not explicitly targeted to reducing bycatch for anything other than economic reasons. While the approach may also currently work for reducing fish bycatch, if southern blue whiting could be economically caught some other way in future, the approach would change. Consequently, I don't think it's appropriate to describe the fishing approach specifically as a bycatch reduction strategy. (This issue also comes up in the scoring).

IMM response: Based on the current information available, the operational strategy is a key component to ensuring the low level of bycatch within this fishery. Changes to that fishing method would be identified during the annual audit process, and any implications for the unit of certification or level of bycatch would be identified and scores adjusted as required. In the same way, a theoretical certified bottom trawl fishery that was modified to be semi-pelagic within the bounds of the unit of certification, reducing bycatch and demersal impacts, would be reviewed during the annual audit for both the unit of certification and habitat impact scores.

7.3. ETP species, paragraph 1 – Note many corals, some sharks, manta rays etc are now protected (see Schedule 7A of the Wildlife Act for a complete list).

- Note the requirements for reporting protected species captures have changed (possibly subsequent to this assessment being conducted). The Fisheries Act describes these changes, but in time, the Wildlife Act will also be revised. Essentially, captures are now reported on a specific form, which is administered by MFish. This is to provide for consistency in reporting and effective data collection/collation. MFish's Research, Data and Reporting team could advise on the details

IMM response: Thanks to the reviewer for highlighting the additional information. Further details on this have been added to the text of Section 7.3, and to the text against performance indicator 2.3.3.

Paragraph above Table 19 – There was one DOC-funded study of net capture mitigation undertaken through the Conservation Services Programme. If there are others, additional information would be helpful.

IMM Response: further details of the findings of Clement and Associates (2009) have been added to the text of section 7.3. Further reference has been made to Bull (2007), covering general mitigation methods for trawls, and Rowe (2007) for pinnipeds

Text above Figure 11 – What about percentages of the spawning habitat that have been trawled, in relation to BOMECE habitat classes? This would give a better indication of the spatial impacts of the fishery (which focuses on spawning areas).

IMM response: we have added information on the swept area pattern of the southern blue whiting fleet over recent years (see new Figure 12), which supports the view that the potential impact on benthic habitat is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. We also note that as part of the 10 year Research Programme, the trawl grounds of the SBW fisheries will be mapped and audited annually (see 2.4.2), and further calculations of the potential swept area by BOMECE habitat classes will be monitored during the annual audit process

14.1 Condition 1 – This text may need revising, depending on the Assessment Team's views of the suggestions for amendment made above.

IMM Response: Adjusted as discussed above

P2 scoring – At times, I found this a little difficult to follow. Rather than following a cumulative scoring approach from SG60 upwards, it appeared that the starting point for scoring may have been SG100, with points subtracted to reach the final score. Similarly, the mixing of elements from SG 80 and SG100 did not always seem appropriate. I have made specific comments under the PIs below.

IMM response: This has been clarified using the headings for SG80 only, and details of scoring against the PI elements

Performance Indicator Review

Please complete the table below for each Performance Indicator which are listed in the Certification Body’s Public Certification Draft Report.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery’s performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.1.1	Yes	Yes	NA	Notes on scoring comments: 6I: Note that the projections are derived from the rejected model. Caution is justified here. 6R: Note that if take continues to be at increased levels, increased monitoring could be justified.	We expect quota to be reduced for 6I unless the missing biomass is found again. An on-going appropriate response will be checked in the surveillance audits. Increased monitoring is planned anyway for 6R. We have taken this into account and will be checking this during surveillance audits.
1.1.2	Yes	Yes	NA		
1.1.3	Yes	Yes	NA		
1.2.1	Yes	Yes	NA		
1.2.2	Yes	Yes	NA	In the scoring comments, briefly clarify why the SG100 was not met.	Some text has been added.
1.2.3	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.2.4	Yes	Yes	NA	Scoring comments 6l: 'The assessment takes into account.....': Clarify whether the verbal reports of 'other checks and analyses' are documented in the working group minutes (and so available outside the WG).	
2.1.1	Yes	No	NA	Scoring comments paragraph 2: Include a source for the direct quote. Scoring comments paragraph 3, first sentence ending: '...the status remains highly uncertain'. This doesn't appear to mesh with SG100. I suggest SG80 is more appropriate, given SG80 deals with 'main' retained species, rather than all retained species. I note the uncertainty around jack mackerel, and the lack of an assessment for porbeagle shark. Without some sort of analysis, determining (with a high degree of certainty) that species are within biologically based limits would seem impossible.	The references provided at the bottom of the PI2.1.1 provide information on the sources of quotes. The score given was higher than 80 given the small levels of bycatch of retained species within the overall catch. Given this level of impact, compared to the overall catches within the fishery, we consider that there is a high degree of certainty that retained species will be within biologically based limits, defined by the TACC levels. This will continue to be monitored during the site audit visits. However, given the observations and the clarified scoring requirements of MSC, we have reduced the score to 90, given that while we consider the the first element is met at SG100, and the second SG100 element is only met for the primary retained species.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.1.2	Yes	No	NA	<p>I suggest rescoring as:</p> <ul style="list-style-type: none"> - The operational approach is not, in my view, a strategy for reducing bycatch. If target fish could be captured more efficiently, though with more bycatch, what provisions are in place to consider or manage that? I suggest a re-evaluation of what is considered a 'strategy' here. Approaches to limiting fish catch and bycatch may be more appropriate. - To my knowledge, strategies are not in place for all retained species. <p>I suggest 90 as a score for this PI, given that there is good evidence of a partial strategy, it's efficacy and implementation.</p>	<p>Our response to the reviewer's comment in the main text above re operational strategies holds here, and we maintain our view that the operational fishing strategy, along with the formal QMS framework for retained species, represents a strategy for managing retained species. As the QMS species are, by definition, retained species, the QMS strategy and framework holds. As noted, however, the full implementation for all QMS strategy, with full analytical assessments, does not occur for all retained species, and hence the third SG100 element is not achieved. The score is therefore 95.</p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.1.3	Yes	No	NA	<p>Scoring comments:</p> <p>'Accurate and verifiable information.....': The comments note that the consequences of catch are not known for all affected populations. While non-target fish catch may be small in quantity, this evaluation does not meet SG100.</p> <p>'Information is sufficient.....': Likewise, the text notes that 'information for other QMS species is more limited and quantitative estimates have not yet been developed'. Consequently, I doubt information is sufficient to quantitatively estimate outcomes status with a high degree of certainty, as required in SG100.</p> <p>'Information is adequate.....': Again, if this applies to all retained species, I doubt information is adequate given a high degree of certainty is required.</p> <p>In my view, this PI would more appropriately score 85 (all the SG80s, and one SG100, re monitoring of retained species).</p>	<p>We note that this refers to the consequences of catches (2.1.1), rather than the level of catches (2.1.3) and this has been taken into account in the scoring for 2.1.1. We clarify our original comments noting that the monitoring of catch history and catch rate information collected allows the consequences to be monitored.</p> <p>This shortfall for ALL QMS species is the reason that a score of 100 is not given. This element reaches the SG80 mark, and this has been clarified in the text.</p> <p>Agreed, the third element has been re-scored at the SG80 level</p> <p>As noted in the clarified text, final element achieves the SG100 level, based on the multiple data sources available and ongoing data collection process.</p> <p>The overall scoring has therefore been clarified at 90.</p>
2.2.1	Yes	Yes	NA	<p>Note earlier comments about the operational approach vs strategy.</p>	<p>We refer to the response in the main body of this report, and maintain the score given.</p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.2.2	Yes	No	NA	<p>I was uncertain about the scoring method here – if the strategy is deemed to be developed to the SG100 level, subsequently applying the SG80s to it seemed inappropriate.</p> <p>I suggest a rescore at SG80 for all elements, or at best 85 given the state of development of the QMS introduction framework.</p> <p>Further, it would be worth clarifying which taxa the NPOA referred to here applies to – I assume sharks?</p>	<p>We have clarified the SG text and used the SG80 text throughout the tables, highlighting where a higher, or lower, score is justified.</p> <p>Our justification for scoring has been clarified. The QMS framework details the basis for inclusion of non-QMS species within it. This formal approach represents a strategy (SG100), i.e. more than a partial strategy (SG80), however we note that a high degree of confidence (SG100) cannot be given for all species within the strategy, which complies with the observation on the state of development. A score of 90 is therefore justified. The NPOAs pointed out by the reviewer refer to both sharks and birds, which are discussed in 2.3. The reference in the summary of the PI scoring section is therefore moved to that section.</p>
2.2.3	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.3.1	Yes	Yes	NA	<p>Scoring comments: Note additional corals protected – this legislative change (Schedule 7A of the Wildlife Act) may have occurred after the Assessment team's site visits.</p> <p>Fur seals: Clarify what years there were no trawls. This would help demonstrate the extent of interactions. Which area does the 'average 14 per annum' apply to?</p> <p>Sea lions: clarify the phrase starting '(a value of 12...)'. What was a value of 12?</p> <p>Corals: Clarify which research programme is mapping the distribution of cold water corals. Is this across the EEZ/SBW area/other spatial boundaries?</p> <p>Clarify how the monospecific nature of the fishery reduces the likelihood of indirect effects – I assume through diet, but this is not clear currently.</p>	<p>Additional text on the legislative change has been added, but this does not affect the scores, as cold water corals were considered here due to their vulnerability to fishing impacts.</p> <p>The year in which no southern blue whiting trawling occurred has been clarified in the text as 2003/04.</p> <p>Avg 14 per annum has been clarified in the text.</p> <p>Value of 12 equals the PBR given specific assumptions on input parameters, but the value given should actually read '8'</p> <p>The programme is across the EEZ (added to the SG text). An example is in Figure 9, and reference Tracey et al. (2011) refers.</p> <p>Correct, through diet and prey competition. This has been clarified in the Scoring table text.</p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.3.2	Yes	Yes	Yes	<p>Note the updated reporting requirements for protected species captures. Also, while observers' monitoring includes collecting information relevant to any compliance breaches, they do not implement the legislation. Other parts of MFish would follow up where this was deemed appropriate.</p> <p>If the fishery is semi-pelagic, it appears that the operational approach of not hitting the bottom is one that suits the fishery, rather than being a strategy that is designed for benthos/coral bycatch reduction per se. The Assessment team could consider recommending that gear is not set when there are marine mammals in the water. The text notes that some vessels already operate this way (but apparently not all, at least at the time of the Assessment).</p> <p>Note suggestions in the General Comments section above, for amending/rewording the Condition.</p>	<p>Text has been added to highlight this point. Text has been added to clarify the role of the observers.</p> <p>Correct, but the comments above refer. As noted for the operational bycatch strategy above, changes to their operational practices would be monitored through the annual audit process.</p> <p>The team agrees that this operational strategy would be appropriate where necessary, although the low interaction rate suggests that this would be appropriate if further specific mitigation requirements were identified at future audits.</p> <p>This has been addressed.</p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.3.3	Yes	Yes	NA	<p>Scoring comments: Note that monitoring of fur seal 'populations' has been patchy at best. Sea lion monitoring on the Auckland Islands is regular but on Campbell Islands it is not.</p> <p>'Information is adequate...': Mention rationale for injury here</p> <p>'Accurate and verifiable...': Injuries and consequences are not well known.</p>	<p>We note in the SG text that 'Studies of both fur seal and sea lion breeding populations have been undertaken, with monitoring being performed at irregular intervals'. We also note that the latest DOC survey of Campbell Island pups was in 2010, and the results of this survey are awaited before PBRs are calculated.</p> <p>Text on the role of the observers in monitoring interactions with ETP species and their fate (including recovering and returning dead specimens for identification and autopsy) has been added.</p>
2.4.1	Yes	Yes	NA	<p>Consider recommending an examination of BOMEK/rawl track overlap within the SBW spawning habitat, as this would provide a better indication of the impacts of the fishery.</p>	<p>We have added figures on the potential swept area of fishery relative to the NZ EEZ and overall SBW fishing area, noting that the semi-pelagic nature of fishing will mean that impacts are less than these figures. We note that " as part of the 10 year Research Programme, the trawl grounds of the SBW fisheries will be mapped and audited annually ", and this will be monitored during the annual audit process.</p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.4.2	Yes	Yes	NA	The strategies referred to are extremely high level. It would be valuable for the fishery to have quantified management objectives for habitat interactions, for example, what is an 'acceptable' level of interactions with BOMECH habitat classes.	In part the high level nature of the strategies reflects the available information indicating only a 6.9% swept area interaction, the fact that this is likely an overestimate given the nature of fishing, and reduced impact that this therefore has on the benthic habitat. In turn, the interaction levels identified have not raised concerns within the Ministry. We note that annual audits of interactions are beginning, and MFish and DOC would act if concerns arose. We also note that while we consider the strategies are considered robust, their implementation is in its infancy and hence have scored the next two elements at SG80. Further implementation evidence at the annual audits could lead to a changed score.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.4.3	Yes	Yes	NA	Distribution of habitats would usefully be better known for the management of fishery impacts.	It is unclear whether the reviewer is suggesting a change in score here. However, NZ benthic mapping represents some of the best that the review team has encountered, with the BOMECE mapping process, cold water coral surveys (covered under 2.3) etc providing information on the distribution of the habitats over their range, with particular focus on vulnerable habitats (as required under the SG100 level). However, as we note, changes in habitat distributions over time have not been measured. We therefore maintain the score given.
2.5.1	Yes	Yes	NA	Consider referring to the ongoing issues with the stock assessments here.	As we note above, in the longterm, research on natural mortality and behaviour may yield explanations which might be included in a model, although this also may require an improved understanding of the wider ecosystem. However, the assessment currently provides indications of stock status with relatively high probability, which is adequate to provide evidence that the fishery is highly unlikely to disrupt the key elements of the ecosystem (SG80).
2.5.2	Yes	Yes	NA	Under the score line, clarify the elements missing that preclude reaching SG100.	This has been clarified through indication of the scores given for each element, and the use of the SG80 headers.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.5.3	Yes	Some confusion re inclusion of an SG60 criterion.	NA	I think this is intended to be scored at SG80(+?). If so, clarify how the score increases from 80 to 85. The inclusion of one SG60 criterion confuses the scoring somewhat. In my view, SG80 is appropriate, and justified by the accompanying text under the SG80 elements.	The inclusion of the SG60 header was a typographic error. The scoring approach has been clarified for each SG element. The fourth element of this PI, referring to collection of data, is considered to reach the SG100 level.
3.1.1	Yes	Yes	NA		
3.1.2	Yes	Yes	NA		
3.1.3	Yes	Yes	NA		
3.1.4	Yes	Yes	NA		
3.2.1	Yes	No	NA	Objectives are well defined, but often not measurable or able to be quantitatively tested (with the exception of harvested species catch limits). I suggest a revised score of 85.	Agree. This has been rescored at 85
3.2.2	Yes	Yes	NA		
3.2.3	Yes	Yes	NA		
3.2.4	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.2.5	Yes	Yes	NA		

Any Other Comments

Comments	Certification Body Response

Appendix C: Client Action Plan

MSC CERTIFICATION OF NZ SOUTHERN BLUE WHITING CLIENT ACTION PLAN

Management Objective

The SBW 6I (Campbell) fishery does not pose a risk of serious or irreversible harm to New Zealand sea lion, *Phocarctos hookeri*, and does not hinder population recovery of this species .

PI 2.2.1

SG60: Main by catch species are likely to be within biologically based limits or, if outside such limits, there are mitigation measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding.

If the status is poorly known there are measures or practices in place that are expected result in the fishery not causing the bycatch species to be biologically based limits or hindering recovery.

SG80: Main by catch species are highly likely to be within biologically based limits or if outside such limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding.

SG100: There is a high degree of certainty that bycatch species are within biologically based limits.

Scoring

75

Rationale

The main incidental capture species for this fishery New Zealand sea lion, *Phocarctos hookeri*, is currently listed as nationally critical by the Department of Conservation (Baker et al. 2011). There is significant monitoring and mitigation in place, high levels of monitoring by at sea Government observers of both interaction levels and adherence to industry agreed risk mitigation practices (the Marine Mammal Operating Procedures). The Department of Conservation is carrying out counts of pup production for the adjacent sub-population rookeries (Maloney et al, 2009).

Condition

By the third surveillance audit, main incidental capture species must be highly likely to be within biologically based limits or, if outside such limits, there must be a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding.

Client Action Plan

The client fishery, in conjunction with the Ministry of Fisheries, will continue to conduct ongoing monitoring of both levels of New Zealand sea lion interactions and adherence to the agreed mitigation measures. Monitoring will be driven through Operational Objective 2.2 in the Southern Blue Whiting National Fisheries Plan chapter and will be undertaken through the Ministry's Observer Programme. Observers will achieve not less than 20% coverage onboard client fishery vessels on the SBW 6I fishery each year, with coverage being progressively scaled up over the period of certification. Additional analyses of the nature and extent of interactions will further enable trends in incidental interactions and mortality data for the species to be assessed.

At present, the monitoring, mitigation and assessment measures in place are considered to be demonstrably effective, such that the southern blue whiting fishery does not adversely affect the New Zealand sea lion sub-population at the Campbell Islands. However, to ensure current interactions are within biologically based limits for sea lions, the client fishery will undertake an updated PBR analysis of the Campbell Islands' sea lion population by 20134. Population research already, or being, undertaken by Department of Conservation will help to inform these analyses. This process is achievable because good data are available on the levels of fishery interactions (relatively little fishing effort coupled with high levels of observer coverage) and on the recent *Phocarctos hookeri* population size at the Campbell Islands (from Department of Conservation research).

Should the PBR analysis demonstrate that further mitigation measures are required, DWG will, in conjunction with the Ministry, develop, implement and monitor these.

Consultation on Condition

Additional consultation is not required for this condition as no external parties are involved in the delivery of this action plan.

Appendix D: Stakeholder Comments

MSC Interview Record NZ EEZ Fisheries

IMM Attendees

Lead Auditor/Coordinator: Seran Davies

Team Members:

Geoff Tingley (Lead Principle 1), Graham Pilling (Lead Principle 2) and Jo Akroyd (Lead Principle 3)

Stakeholders:

Affiliation

Greenpeace

ECO

Specialist)

Representatives

Karli Thomas (Oceans Campaigner)

Geoff Keey (Political Advisor)

Barry Weeber (Co-Chair and Main Fisheries

Cath Wallace (Co-Chair and Economist)

Location: Ministry of Fisheries, Wellington, New Zealand.

Date: 23rd July 2009

2. Status

What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGO etc)

eNGO

3. Stakeholder Key Issues

What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)

What information is available to allow us to determine the status of the fishery in relation to each issue?

P1

TACC is higher than the stock. TACC should be reduced. There is a verbal agreement to “shelve” the TACC i.e. they will not fish to the higher TACC.

These fisheries have areas where there are either none or very old stock assessments.

6A and 6R stock is unknown as there is no stock assessment. 6R was last assessed in 1998 based upon one ecosound reading. The biggest catch was through tracking of southern blue whiting (Japanese vessel in 2001).

There are no stock assessments for LIN 1 and LIN 2. HAK4 and HAK1 have reasonable assessments. HAK7 there is a problem with the fishery information. All of HAK7 needs to be acoustically assessed.

The extent to which New Zealand manage the TAC/TACC follows stocks enables the approach to effectively fish stocks right down.

Ambiguities within section 10 of the Fisheries Act.

P2

BPA's are not marine reserves and are not deemed as being suitable for protecting endemic biodiversity. Around ½ of these areas are located in areas where no fishing occurs. They therefore provide limited protection from a threat which historically does not occur there. Also, these BPAs are voluntary so industry could potentially revoke the non-fishing activity. It is considered that this industry led approach is actually undermining the actual MPA programme.

Bottom trawling cannot be considered as a sustainable fishing practice. Greenpeace require a broader definition of the term “destructive fishing” which should include bottom trawling, canyoning, dredging and drift nets.

Trawling is destructive and causes damage, has been reported by NIWA scientists that trawlers can “wander” into closed and protected areas such as sea mounts.

Bycatch of fur seals and sea lions within these fisheries.

The long line fleet have a large impact upon seabirds (range of petrels and albatross species). The trawl fishery is better managed to avoid bird with various forms of mitigation.

There are discrepancies in observer coverage across these fisheries.

Compliance issue with the non-reporting of bycatch species on boats which do not carry observers. The West coast hake and Ling fisheries, SBW, Campbell and Bounty Island fisheries all have marine mammal bycatch.

There is a large shark bycatch in the deepwater fisheries. Spiny dogfish in ling fishery (previously non QMS).

Concern that hake and ling are being certified “on the coat tails” of New Zealand hoki. Two independent review panels state that this (hoki) fishery should not have been certified.

P3

Hake has a high rate of juvenile catch both retained and discarded (run through fish meal plant). This is affecting small areas which are targeted and this calls into question how this is affecting stock.

High grading occurs within the hoki fishery.

Public access to fishery management is required. Management is currently deemed to be quite secretive and management documents are not within the public domain (no public engagement within the process). Section 12 of the fisheries act- no public right to be involved in management of fisheries.

Management is reliant on the fishing industry for money.

4. Other issues

(e.g. any other stakeholders we should contact, any written submissions to follow?)



Seran Davies
IMM Project Coordinator

MSC Interview Record NZ EEZ Fisheries

IMM Attendees

Lead Auditor/Coordinator: Seran Davies

Team Members:

Geoff Tingley (Lead Principle 1), Graham Pilling (Lead Principle 2) and Jo Akroyd (Lead Principle 3)

Stakeholders:

Affiliation

Royal Forest & Bird
Knowles

Representatives

Kevin Hackwell (Advocacy Manager) and Kirstie
(Marine Conservation Advocate)

Location: Ministry of Fisheries, Wellington, New Zealand.

Date: 23rd July 2009

2. Status

What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGO etc)

eNGO

3. Stakeholder Key Issues

What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)

What information is available to allow us to determine the status of the fishery in relation to each issue?

The BPA's should not be considered very highly within this assessment. The position of them is incorrect and no research, knowledge of habitat or suitable benthos was undertaken to support them. RF&B do not agree that the BPA's address the protection of some of the hake, ling & SBW (Southern Blue Whiting) grounds. Research needs to be undertaken on the habitats and the BPA's should not be given much weighting within these EEZ fishery assessments.

High grading occurs within the NZ EEZ fisheries.

Southern Blue Whiting (SBW)

Key issues raised with regard to P2 but also some concerns regarding status of stock under P1. High catches of marine mammals (mostly NZ fur seals but also some NZ sea lions). The squid trawl fishery has the worst record for this and has a plan to rectify the situation. Argue to the contrary that the code of practice does not work. Murray Smith has undertaken modelling work on bycatch & Sophie Manual (NIWA). Bounty Islands pose the biggest risk area with large amounts of bycatch. Factors contributing to capture include turning whilst trawling plus the time of day when trawling takes place- these things are not picked up by the codes of practice. Also seasonal strategies do not come into play. This fishery has killed more mammals than the squid fishery. 95% of New Zealand Sea lions are breeding on the Auckland Islands. Louise Chilvers (DOC) and Igor Debsky (DoC)/Nathan Walker (MFish) have further information on this. Observer coverage is misaligned to the period of increased bycatch. Seabird bycatch is not particularly high but it is a diverse range of birds. There is potential underreporting of marine mammal bycatch.

In addition there are trophic impacts and habitat impacts associated with bottom trawling. The range of species caught as bycatch is not as well-known as from the hoki fishery.

Ling

Long line: Currently low level in NZ waters. Fishing occurs around the Bounty Islands in smaller vessels. Vessels over 28m have seabird mitigation in place. Ed Abraham has information showing high seabird bycatch from longline

fishery (smaller vessels). Also sponges and corals are brought up from the seabed by the lines. There is a long history of misreporting from this Ling fishery.

Problem raised with Hoki are the same for hake and ling as it is the same fishery. There is a research paper on misreporting in the hoki fishery which also includes ling misreporting information (Philip Clarke, 2009). Other research includes information on the misreporting of observer documents (Tracey Batman (MFish) Richard Burns & Geoffrey Cove (Lincoln University), Graham Brewer (Dunedin).

Trawl

Issue with P2- fur seal bycatch. The SLEDS (Sea Lion Exclusion Devices) do not work for fur seals and this results in unacceptably high levels of fur seal bycatch.

Hake

The hake fishery has the same issues as identified for Ling. Problem with single species focus stock assessments (as hake, ling and hoki are all caught together e.g. hake/ling may be bycatch in the hoki fishery and vice versa. Issue therefore with the three overlap species of hoki, hake and ling.

Issue with process and transparency at the Ministry (MFish). Scientists results and information are not always integrated into Ministry decisions especially with regard to ETP and habitats.

RF&B support real time catch reporting.

Bounty Islands has a serious fur seal bycatch problem. Some areas are good, but equally some are not e.g. no seabird standard in place etc. ENGO's contacted to comment by MFish. DW Fish plan (DWG & DWTeam) provided to RF& B to comment on but there was no scientific involvement & they do not consult with scientists internally.

There is no drive regarding the working towards minimising the bycatch. Aerial counts of fur seal populations are informative for distribution but cannot be used for abundance information. Boat based information undertaken in Fjordland (South Island) is the same.

Trawls should only go over old trawl areas- no expansion into new areas. For BPAS – areas of significance need to be identified as well as areas being put to one side to study the rate of recovery of the seabed from trawling in order to better understand the impact of the fishery.

NO MPAs are planned within NZ's EEZ until 2013. The considered approach for the MPA protection was squashed by the BPA plan.

RF&B would like to discuss the BPAs with DWG. MFish and DOC have been told to freeze all work due to the agreement for the BPAS.

Overview:

Issue with P2 for Southern Blue Whiting

Autoliners are ok within the longline fleet (but the small vessels are not- less regulations, more issues with bycatch etc)

With regard to the trawl fisheries, RF&B do not think that the hoki fishery met the MSC standard (although hake and ling are slightly better than hoki).

4. Other issues

(e.g. any other stakeholders we should contact, any written submissions to follow?)

Hugh Best (Marine conservationist) has 16 years worth of fur seal data.
Barry Weever (ECO) - key person to be contacted on fisheries stock assessments.
Louise Chilvers (DOC) and Igor Debsky (DoC)/Nathan Walker (MFish)
Murray Smith & Sophie Manual (NIWA)
Ed Abraham



Seran Davies
IMM Project Coordinator

MSC Interview Record

IMM Attendees

Lead Auditor/Coordinator: Seran Davies

Team Members:

Geoff Tingley (Lead Principle 1), Graham Pilling (Lead Principle 2) and Jo Akroyd (Lead Principle 3)

Stakeholders:

Affiliation

WWF

Manager)

Programme Manager)

Representatives

Peter Trott (WWF-Australia. Fisheries Programme

Rebecca Bird (WWF- New Zealand. Marine

Location: Talley's Seafood, Nelson, New Zealand.

Date: 24th July 2009

2. Status

What is the nature of the organisations interest in the fishery (e.g. client / science / management / industry / eNGO etc)

eNGO

3. Stakeholder Key Issues

What, if any, specific substantive issues or concerns are identified regarding the fishery? (P1 – P2 – P3)

What information is available to allow us to determine the status of the fishery in relation to each issue?

There is no management in place for bycatch species (except if QMS) e.g. what about sharks? General harvest strategies are in place not specific to the fisheries themselves for appropriate reference points e.g. SBW.

There is not enough information on the habitat types e.g. % of areas fished and sensitivity level of habitat. Require demonstrable proof regarding impacts to trophic structure and ecosystem modelling.

There is not enough convincing evidence that seals will survive SLEDs. Critical injury and hypoxia may occur. SEDs are effective in other fisheries and should be introduced here in addition to the SLEDs.

Hake

Similar issues as for Hoki. Bycatch problems with fur seals, birds, sharks and skates. Issues with Trawl footprints. Concerns for hake stock on Chatham rise classified as overfished in last 5 years. Information is not causing concern for sub-Antarctic stocks.

Hake and Ling fisheries are not precautionary enough. Variability in stocks not considered.

Concerned that the harvest strategy is not tried and tested as it is a generic strategy.

There is an impact of this fisheries gear type on the habitat. The severity of this impact is not well known.

Discarding is occurring within the fishery predominantly of bycatch species (also happens with QMS species).

Monitoring & compliance: prosecutions are occurring due to high grading within the hoki fishery (same fishery as for hake). There is also a compliance issue with tracking the products for this fishery.

There is underreporting present throughout the EEZ fisheries and the trawl fisheries have an issue with compliance.

Ling

Chatham rise is fully fished. There is limited information regarding stock status for west coast South Island.

Impacts of this fishery upon bycatch species are unknown also; discarding of bycatch is known to occur.

Inshore long lines have high interactions with seabirds and no effective mitigation nor codes of practice. Australian fisheries abide by CCAMLR regulations which are proving to be effective- suggest the same approach for NZ fisheries.

Southern Blue Whiting

There is an issue with the stock especially Campbell and Bounty stocks. Uncertainties in stock assessments also unknown stock trend. Damaging gear type used in fishery. Protected species are affected-especially around the Bounty's e.g. sea lions, birds and other marine mammals. Model is based upon the squid fishery only (using information based upon sea lion capture). Not enough convincing information to suggest that the usage of the SLEDS is allowing survival (high percentage is suffering hypoxia or serious injury). Current on-going monitoring is not effective and further information is required.

4. Other issues

(e.g. any other stakeholders we should contact, any written submissions to follow?)



Seran Davies
IMM Project Coordinator

Appendix E: MSC Review and report on Compliance with Scheme requirements



Marine House
 1 Snow Hill
 London EC1A 2DH
 United Kingdom
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SUBJECT: MSC Review and Report on Compliance with the scheme requirements

Dear Jo Akroyd

Please find below the results of our partial review of compliance with scheme requirements.

CAB	Intertek Moody Marine
Lead Auditor	Jo Akroyd
Fishery Name	New Zealand EEZ southern blue whiting pelagic trawl
Document Reviewed	Public Comment Draft Report Posted

Ref	Type	Page	Requirement	Reference	Details
TO.171	Major		CR-V1.1-27.12.1.1	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk for the integrity of certified products: The systems in use.	The possibility of vessels fishing outside the unit of certification is not mentioned in section 13
TO.172	Major		CR-V1.1-27.12.1.4	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk for the integrity of certified products: At-sea processing activities.	There is no description on how at sea processing activities will be controlled by the fishery

TO.175	Major		CR-V1.1-27.12.2	If the CAB determines the systems are sufficient, fish and fish products from the fishery may enter into further certified chains of custody and be eligible to carry the MSC ecolabel.	In 13.4 it is not clearly specified that the product can enter Chain of Custody and carry the MSC ecolabel
TO.178	Major		CR-V1.1-27.6.3	The CAB shall document the rationale for the target eligibility date and include an assessment regarding how the assessed risks to the traceability system in the fishery are adequately addressed by the applicant to give confidence in this date.	The rationale is not describen in the report
TO.179	Major		CR-V1.1-27.12.1.3	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk for the integrity of certified products. The opportunity of substitution of certified with non-certified fish prior or at landing.	Risk of substitution prior landing is not mentioned
TO.181	Major	63	CR-V1.1-27.11.1.3	The CAB shall draft conditions to result in improved performance to at least the 80 level within a period set by the CAB but no longer than the term of the certification, subject to 27.11.8.	Condition 1: The condition must also address the third scoring issue of the SG80, where there must be evidence that the strategy is being implemented successfully. The condition and client action plan must address this issue in order for performance to improve to the 80 level.

This report is provided for action by the CAB and ASI in order to improve consistency with the MSC scheme requirements; MSC does not review all work products submitted by Conformity Assessment Bodies and this review should not be considered a checking service. If any clarification is required, please contact Maylynn Nunn on +61 (0)2 9524 8400 for more information.



Best regards,
Dan Hoggarth
Fisheries Oversight Director
Marine Stewardship Council

cc: Accreditation Services International

IMM response to MSC concerns

IMM agrees with MSC concerns and has amended Section 13 of the report and Condition 1 to address the issues raised. See below

LIMIT OF IDENTIFICATION OF LANDINGS FROM THE FISHERY

Traceability of product from the sea to the consumer is vital to ensure that the MSC standard is maintained. There are several aspects to traceability that the MSC require to be evaluated: Traceability within the fishery; at-sea processing; at the point of landing; and subsequently the eligibility of product to enter the chain of custody. These requirements are assessed here.

13.1 Traceability within the fishery

The traceability within the fishery is deemed as being very good with all catches having documentation supplied upon landing which contains information on catch area, species, amount of catch and vessel. This documentation is passed along with the fish to the point of sale.

If a vessel were fishing outside the Unit of certification there are systems in place. All factory trawlers in NZ are operating under NZ Food Safety Authority (NZFSA) and NZ Fisheries Act rules and regulations. As such they are required to both land all catch of QMS species (such as southern blue whiting) and ensure that any fish that will not be fit for human consumption, e.g. through damage or accidental contamination, is not able to be inadvertently sold into market. This drives the need for all vessels to be able to mark, 'ring-fence' and inventory product or products on a reasonably regular basis. This is coupled with the fact that all vessels produce a wide range of species and products, all of which are needed to be marked by date and numerous other information, and able to be sorted on arrival in port and inventoried for market and export purposes. Both physical and electronic inventory management is inherent in the systems that these vessels operate.

13.2 At-sea processing

At-sea processing occurs on all the major factory ships participating in this fishery. At-sea processing includes the sorting, heading and gutting, filleting, freezing, reduction to surimi and packaging of southern blue whiting.

There are two levels of process technology in the fleet

1. Fully integrated weighing labelling systems which barcode every carton on production and before storage in the ship's hold. This data is downloaded on arrival, reconciled on landing figures and thus final inventory is arrived at. This system allows the tagging of product lines e.g. SBW 1 and 6A bycatch which is non-certified so that it is barcoded as non-certified and trackable and separable ever after simply by scanning. Onshore systems in load-out audit exports.
2. The rest of the fleet practice standard practice where all product (by carton) is labelled as per MAF and NZFSA requirements. The outer markings are used to separate and inventory all product on landing. Hence to ensure SBW non-certified product is separated, all that is required is a directive to the vessel to undertake on standard basis.

13.3 Risk of Substitution

The risk of substitution is considered to be well managed and therefore negligible. There is a large geographic distance between the areas of certified and noncertified fish. Under MFish regulations every container in which fish is packaged on a licenced fish receiver's premise shall be marked with species name, date, licenced fish receivers name, processed state, area fished. As evidence currently EU certified and non EU certified product is produced in the fishery. This is kept separate on board and at discharge and in the coolstore using the cool store's electronic system of bar codes identifying each pallet. Thus the products cannot be mixed at load out time.

13.4 Points of landing

The main points of landing for this fishery are all major New Zealand ports.

13.5 Eligibility to enter chains of custody

The scope of this certification ends at the points of landing which are described above. Downstream certification of the product would require appropriate certification of storage and handling facilities at these locations.

IMM determined that the systems in place for tracking and tracing are sufficient, fish and fish products from the

fishery may enter into further certified chains of custody and be eligible to carry the MSC ecolabel.

13.6 Target Eligibility date

The target eligibility date is October 2011. This is the date from which product is likely to be eligible to bear the MSC ecolabel.

This date is selected as it is less than six months from the publication of the Public Comment draft Report. It is also the beginning of the NZ fishery management year.

The risks to the traceability system in this fishery have been assessed and are adequately addressed. All product at sea and landed is identified with barcodes and labels that identify species, date, area caught and quantity. If a product is caught in an uncertified zone it would be 'red stickered' – it would be identified throughout process and storage. The product would be isolated in cold storage and clearly marked on each pallet.

The NZ Record Keeping Regulations are strict and enforced.

Revised Condition 1

Condition 1. ETP Management Strategy

Based on the analytical information available, while operational strategies appear effective at reducing seabird, fur seal and coral interactions, they appear less effective for sea lions. While the fishery impact appears highly unlikely to create unacceptable impacts on sea lion populations (2.2.1), there is no formal mitigation strategy to ensure this remains so, and analytical evidence to provide an objective basis for confidence that the operational strategies in place will work.

Action required: i) Identify the level of ETP species interactions that would lead to adverse effects on population levels for sea lions, and ii) where a problem is identified, develop and implement appropriate management approaches to achieve those national requirements and objectives. Provide evidence that the strategy is being implemented successfully.

Timescale: Within three years of certification.

Milestone 1: By the first annual surveillance, identify the level of ETP species interactions that would lead to adverse effects on population levels for sea lions,

Milestone 2: By the second annual surveillance, where a problem is identified, develop and implement appropriate management approaches to achieve those national requirements and objectives.

Within three years of certification

Milestone 3: provide evidence that the strategy is being implemented successfully.

Relevant Scoring Indicators: 2.3.2 (SBW 6I only)